WESTERN GAS

November 1928

20 Cents the Copy

Commercial sales floor in the headquarters building of New Orleans Public Service, Inc., New Orleans, Louisiana, with gas ranges on display.

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A MONTHLY JOURNAL DEVOTED TO THE WESTERN GAS & APPLIANCE INDUSTRIES

PRINT IN BINDING

MERCO

MERCO

Type R Nordstrom Valves

Highly Recommended for Curb and Meter Service

An economical Valve that offers the genuine Nordstrom lubricating feature.

Type R should not be confused with our standard line of valves for general service.

Ask for Catalog.

This Valve is of the plug cock type especially designed for curb and meter service. It embodies the patented Sealdport lubricating feature which allows the plug to be turned to 360° without at any time allowing the line pressure to force the lubricant out of the Valve. The plug is held in its seat by means of a metallic spring disc at the base. No operations are necessary to seat or unseat the plug except turning down the lubricant screw which performs the function of unseating, greasing and sealing the Valve.

Merco Nordstrom Valve Co.

Sudsidiary of The Merrill Company

Engineers . . . . Manufacturers

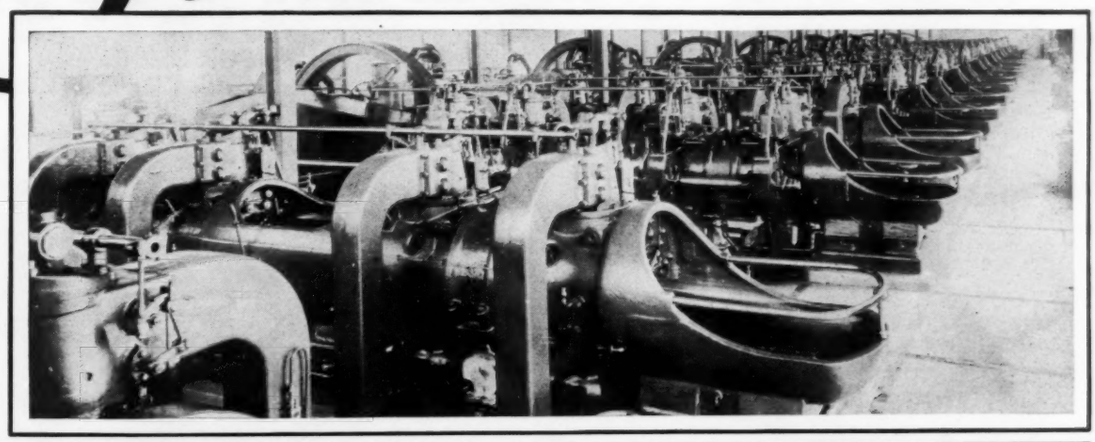
BOSTON—184 Boylston St. NEW YORK CITY—11 W. 42nd St. CLEVELAND—Engineers Bldg.
CHICAGO—Midland Bldg. NEW ORLEANS—Masonic Temple Bldg HOUSTON—Petroleum Bldg.
DALLAS—Magnolia Bldg. SAN FRANCISCO...343 Sansome St. LOS ANGELES—Union Bank Bldg.

FACTORIES: Oakland, Calif., and Belleville, N. J. AGENCIES IN PRINCIPAL CITIES

MERCO

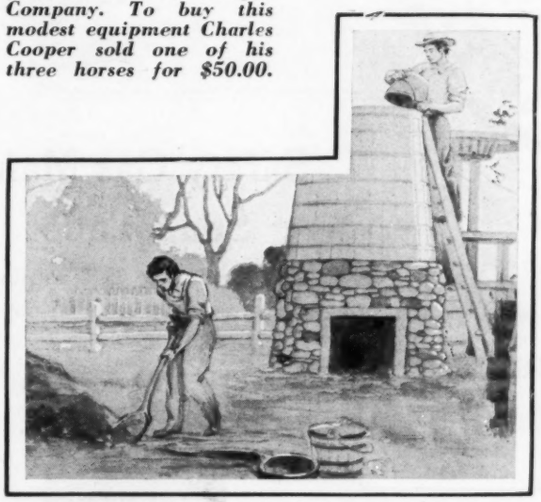
MERCO

95 years



Five years from a century of Engine Building

The first Cooper cupola built by Charles and Elias Cooper in 1833, was the primitive beginning of the present C. & G. Cooper Company. To buy this modest equipment Charles Cooper sold one of his three horses for $50.00.



In 1833, about the time Jackson began his second term—twelve years before Morse perfected his telegraph and steam was first harnessed to the printing press, the Cooper brothers built their first engine. It was a sweep for converting the power of a horse into a rotary motion for driving a foundry cupola blower.

It is often remarked that the first one hundred years are the hardest. We venture this is wrong. In engine building, at least, we are sure they have been the easiest.

It is much harder today than ever before to maintain the standard of excellence with which Coopers have always been identified. New metallurgical processes, new ideas of engine design, new machine shop tools, and manufacturing methods, new power and service problems in the field are all making it increasingly difficult to maintain that standard of excellence. Here at Coopers, research and designing engineers, foundry and machine shop specialists are constantly selecting the good from this maze of new ideas. Experience has taught these men to judge wisely—and is a guarantee that Cooper machinery will continue to represent the very latest advancements and the same standard of excellence.

THE C. & G. COOPER COMPANY

Dallas, Texas **Mt. Vernon, Ohio** **Los Angeles, Calif.** **Tulsa, Okla.**

COOPER

November, 1928, Volume IV, Number 11. WESTERN GAS is published by Western Business Papers, Inc., at 124 West Fourth Street, Los Angeles, California. Subscription price (in advance) 20 cents the copy; $2.00 per year; 3 years $5.00; $3.00 per year foreign. Entered as second class matter June 1, 1925, at the postoffice at Los Angeles, California, under the Act of March 3, 1879.

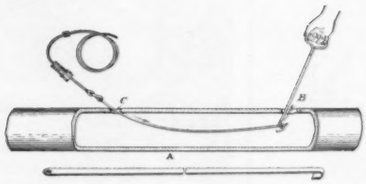
Street Department Supplies

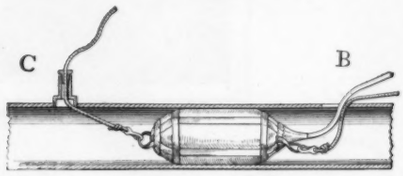
Gas Main Bags

THREE TYPES

TYPE A—Seamless.
TYPE B—Reinforced Seams
TYPE C—Canvas Covered

FOR USE IN GAS, OIL, WATER AND DRAIN PIPES





Safety Gas Main Soap Tape

For bandaging broken pipe. Also binding tape to cover soap tape bandage.

Sample on request.

Air Line Mask

With or without Blower.

Mask and Blower in separate cases.

Blower will supply sufficient air for 4 masks.

NOW IS THE TIME for SOAP TAPE

Safety Gas Main Stopper Co.

523 Atlantic Avenue, BROOKLYN, N. Y.

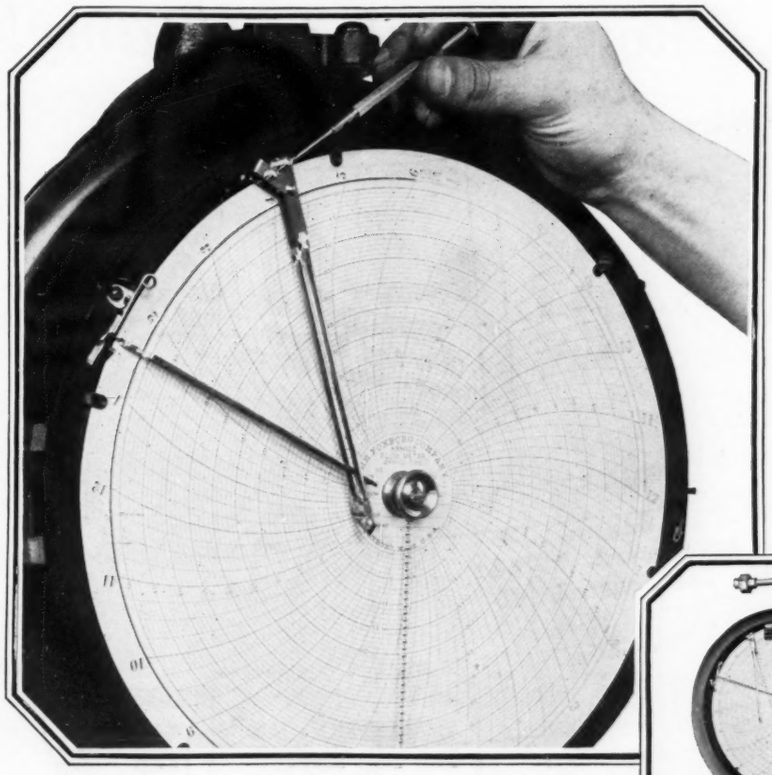
New England Representative
The Eastern Service Co., Boston, Mass.

Texas-Louisiana Representative
Maintenance Engineering Corp.
Box 1402, Houston, Texas

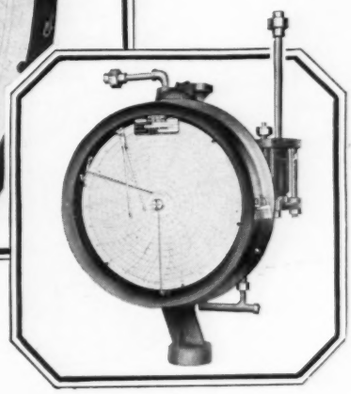
Pacific Coast Representative
C. B. Babcock Co., San Francisco, Calif.

Mid-Western Representative Circle Corporation Tulsa, Oklahoma

EASY to zero



THE new Foxboro Orifice Meter has many outstanding features of excellence but none which the man in the field will appreciate more than the ease with which the instrument is zeroed. After cleaning and filling with mercury a simple micrometer screw zeros the meter. A few drops more or less make no difference. Calibration is permanent.



Note how easy it is to zero the Foxboro Orifice Meter. Calibration is permanent. Accuracy is built in at the factory

THE new Foxboro Orifice Meter has been thoroughly tested in the field. It has been accepted by leading gas and oil engineers throughout the country as meeting the exceedingly difficult problems that constantly confront the producer of gas and oil. Among its many advantages are ease of cleaning, quick assembly, low cost of maintenance, uniform pen chart and uniform float travel. It is the most powerful float type orifice meter on the market. Inherent error is eliminated. It requires less frequent checking. Its sturdiness makes it perform reliably through longer periods of time. Made in three standard differential ranges, 20, 50 and 100 inches of water.

Foxboro Guarantee sealed to each Controlling and Recording Instrument.

THE FOXBORO COMPANY

Neponset Avenue, Foxboro, Mass., U. S. A.

Western Offices

LOS ANGELES, 443 S. San Pedro St. SAN FRANCISCO, 461 Market St.
PORTLAND, ORE., 816 Lewis Bldg.
J. E. TREACY, Strada Golesti No. 9, Ploesti, Roumania
NEW YORK CHICAGO PHILADELPHIA PITTSBURGH DETROIT BOSTON
ATLANTA TULSA CLEVELAND ROCHESTER, N. Y. DALLAS

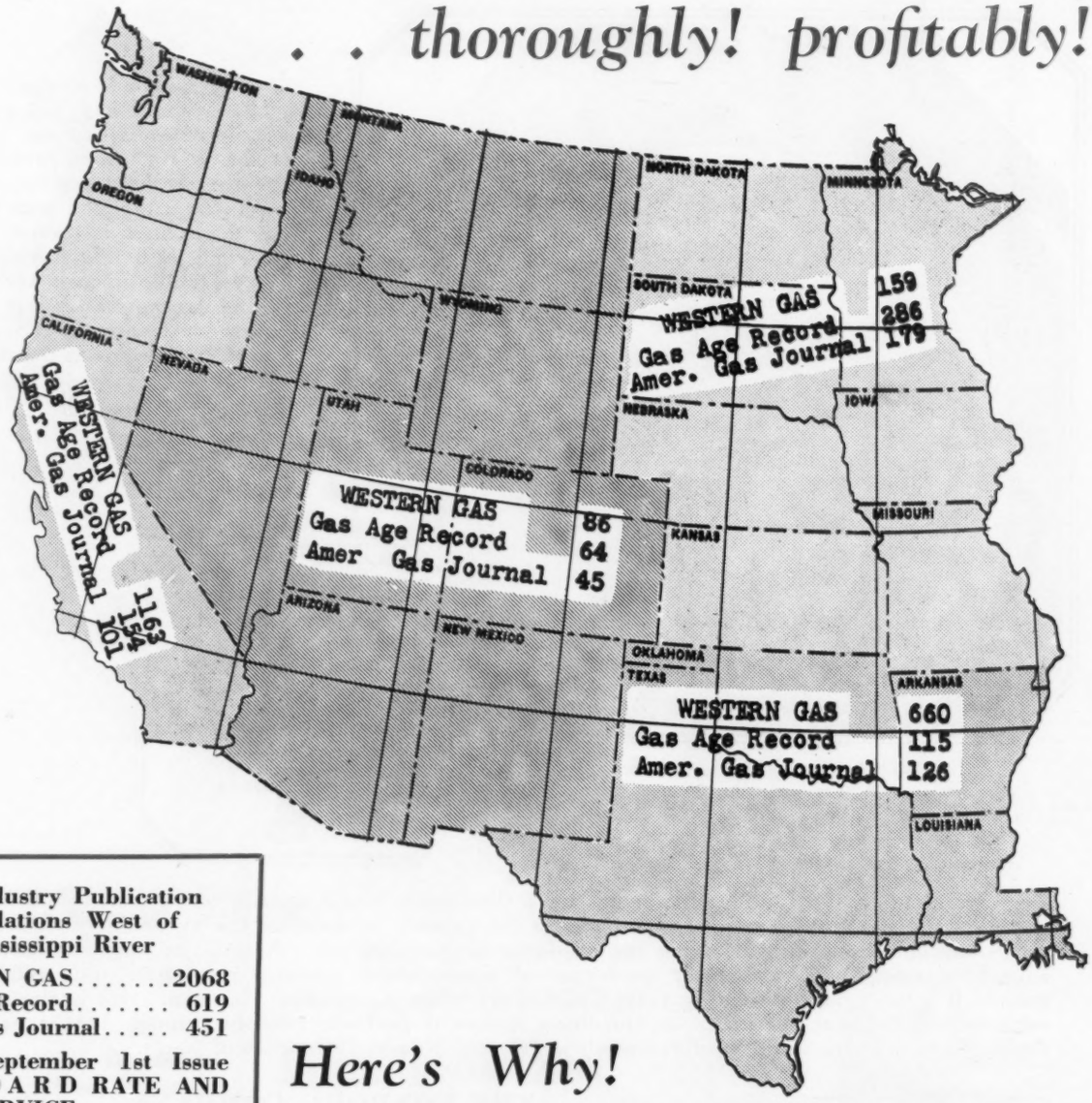
FOXBORO

REG. U. S. PAT. OFF.

THE COMPASS OF INDUSTRY

Instruments for Controlling, Recording and Indicating Temperature, Flow, Humidity and Pressure

A fact . . .
Without **WESTERN GAS**
you can't cover the Gas Industry
. . thoroughly! profitably!



Gas Industry Publication Circulations West of Mississippi River

WESTERN GAS.....2068
Gas Age Record..... 619
Amer. Gas Journal..... 451

As of September 1st Issue STANDARD RATE AND DATA SERVICE.

Here's Why!

A STUDY of the map above will show the outstanding circulation predominance of WESTERN GAS west of the Mississippi—the territory where new gas activity is in its most extensive and profitable development. It is, consequently, the area where gas equipment manufacturers can most surely reap a reward from their advertising. We have much additional evidence why WESTERN GAS should be on the schedule. It is yours for the asking.

Send for this booklet

Contains hundreds of comments on WESTERN GAS by the leaders in every field of the western gas industry. It will prove a revelation as to the pulling power, reader interest, and results a trade paper can attain.

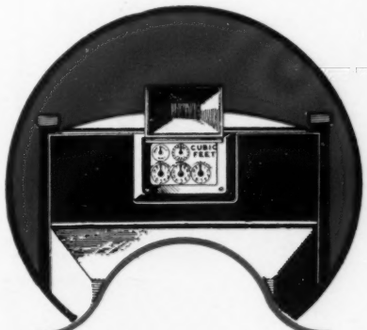
WESTERN GAS

A Monthly Publication of WESTERN BUSINESS PAPERS, Inc.
124 W. 4th St., Los Angeles. Branches: Dallas, Texas; San Francisco

PACIFIC METER WORKS · PIONEERS IN THE WEST ·

The Features that Characterize Pacific Meters have become Known Factors in Meter Value through Performance in Service

Specialization Serves The Coast



PACIFIC METERS

Tinned Steel Case

B Type	C Type
5- 150	6- 600
10- 300	11- 1120
20- 450	25- 2500
30- 600	40- 4000
60-1200	60- 6000
100-1800	170-17500
200-3100	

Rated capacities at ½" loss

Pacific Meters are specifically designed and manufactured for accurate and productive service on the Coast.

Territorial Specification brings outstanding advantages:

1. Convenient locations for manufacture—prompt and economical delivery.

2. Close contact with customer requirements—first-hand, scientific knowledge of conditions that affect gas meter performance.

Added to these are the many other KNOWN FACTORS IN METER VALUE that are constantly being stressed in our personal sales activity, in our literature and advertising.

Though customers are gratified—constant improvement in product and service continues. This is the prevailing policy that has brought to American Meter Company factories world leadership in gas measurement engineering.

PACIFIC METER WORKS

Specializing in the Manufacture of Gas Meters and Allied Apparatus for Pacific Coast Requirements

San Francisco **Established 1901** **Los Angeles**

Northwestern Representatives **Portland** **Northwest Gas and Electric Equipment Company**

AMERICAN METER CO · MEASUREMENT ENGINEERS · CUBIC FEET

BITURINE

The plate at the left, coating with an ordinary enamel, applied over ordinary primer, was photographed after undergoing the approved Navy Test for Adhesion of Bituminous Coatings. Note the disastrous result of dropping a steel ball 2 3-16 inch.s in diameter from a height of 8 feet.

The photo at the right was taken immediately after the plate coated with Biturine Enamel was subjected to the same test described at the left. Note absence of cracked surfaces, illustrating the toughness and adhesiveness of Biturine Enamel applied over Biturine primer.

"Balanced" Ingredients give Biturine its remarkable resistance to the action of soil acids, alkalis and electrolysis

For more than 18 years Oil and Gas Industry pipe line operators have found the solution to their corrosion problems in BITURINE ENAMEL. During these years Biturine Enamel has afforded permanent protection on hundreds of miles of pipe lines, against alkalis, acids and electrolysis.

For more than 25 years the manufacturers of Biturine Enamel have searched for improvement through tests and experiments. Biturine Enamel today represents the practical application of this fund of knowledge gained from years of laboratory and field experience. As a result, Biturine Enamel is a homogeneous product of ingredients that have proven themselves, to our satisfaction, and to the satisfaction of users, to be best adapted to pipe line requirements.

Trade Mark

Some of the ingredients used in making Biturine Enamel to a high standard are imported from far-off countries, greatly adding to the manufacturing cost, and reducing our selling profit, but each has a particular function to perform in rendering pipe lines impervious to corrosive elements, and to leave out a single one would, we feel, materially lower the quality of Biturine Enamel. The consistently successful results obtained from the application of Biturine Enamel to pipe lines has fully repaid us for the care and expense expended in its manufacture.

Succeeding advertisements in this publication will deal separately with the ingredients used in Biturine Enamel and why their inclusion is important in pipe line coatings, if permanent protection is your aim.

HILL, HUBBELL & COMPANY

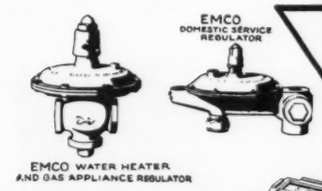
Manufacturers of

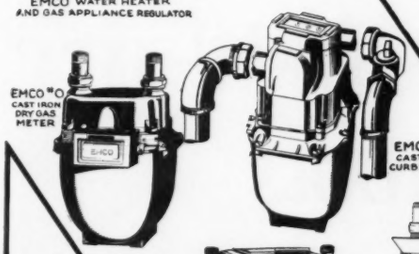
Highest Grade Oil Industry Paints and Pipe Line Coatings

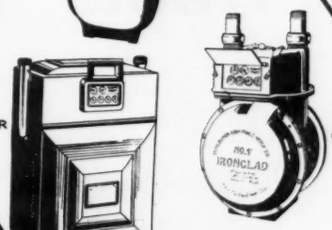
Factories: SAN FRANCISCO and TULSA

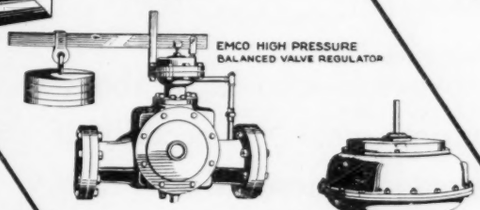
Offices

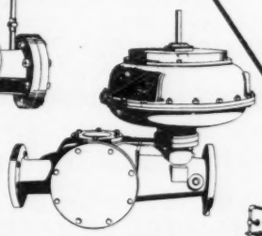
SAN FRANCISCO LOS ANGELES PORTLAND SEATTLE TULSA HOUSTON NEW YORK

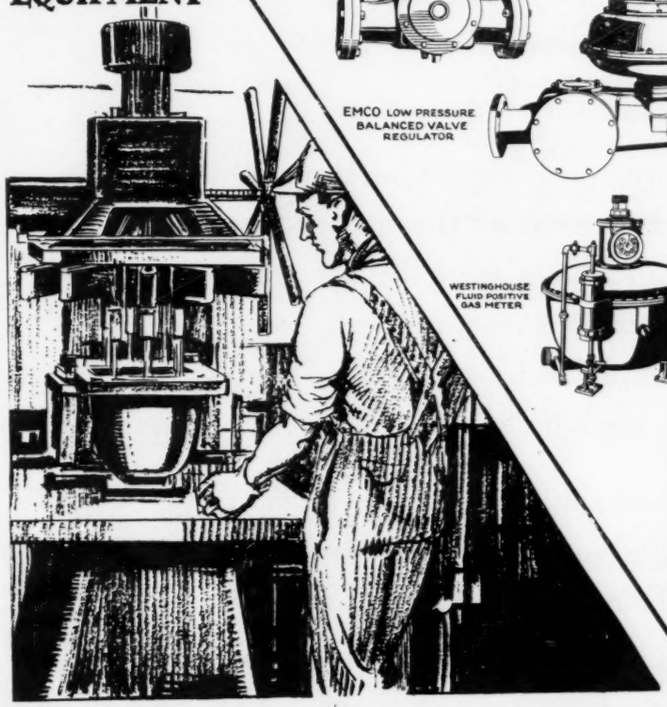




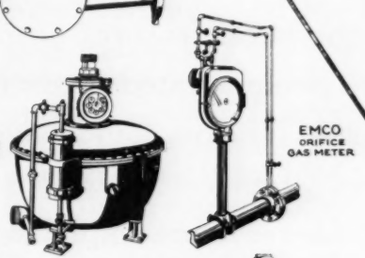


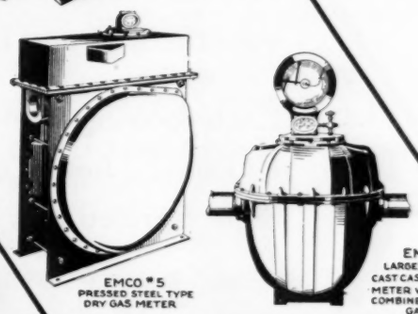






MODERN PRECISION EQUIPMENT





Manufacturing Equipment

Pittsburgh Equitable Meter Company products represent highest grade materials plus careful construction made possible by modern machinery. The latest types of tools, jigs, and fixtures in the hands of expert operators are employed in our shops. That is why our products are uniform in construction and accurate in operation. A cordial invitation is extended to members of the gas industry to visit our factories and inspect each operation.

PITTSBURGH EQUITABLE METER COMPANY

MAIN OFFICE AND WORKS PITTSBURGH, PA.

NEW YORK CHICAGO COLUMBIA, S.C. LOS ANGELES DALLAS
TULSA SEATTLE KANSAS CITY SALT LAKE CITY

7850 Women Attend 7 Cooking Schools

Are women still interested in cooking? Let the fine attendance at the P G and E's cooking schools vouch for that.

Women will always like to learn about new ways of preparing meals—especially if the new ways are made easier with the new Gas Range.

All the latest features of modern Gas Ranges were demonstrated at each of these cooking classes. If you could have seen the interest these women took when the modern Gas Appliances were explained, you too, would vote the P G and E cooking schools a success.

Each cooking demonstration conducted by the P G and E helps everyone sell modern and higher-priced Gas Ranges and Water Heaters.

PACIFIC GAS AND ELECTRIC COMPANY

P·G·and E·

Owned · Operated · Managed
by Californians

THE ENGINEERING *Applications of* SMITH Welding to Underground Transportation

SMITHWelded Line Pipe offers invariably 100% joint efficiency.

A. O. Smith Engineers working with the engineers of pipe line companies, produce pipe that is exactly suited to the conditions to be met in the field.

Due to the SMITHWelding method it is possible to produce pipe of any thinness desired.

This pipe is absolutely accurate, round, and of uniform thickness throughout.

This pipe is produced for any field joint.

It is produced in any size 8" to 26" at the rate of 6 to 8 miles per day.

In addition to the basic advantages gained when A. O. Smith Engineers first applied SMITHWelding to pipe manufacture, and developed the machinery for making it, this group of engineers working with our customers has twice made important progress on pipe line problems that were as old as underground transportation itself.

A. O. SMITH CORPORATION

Oil & Gas Field Products Division

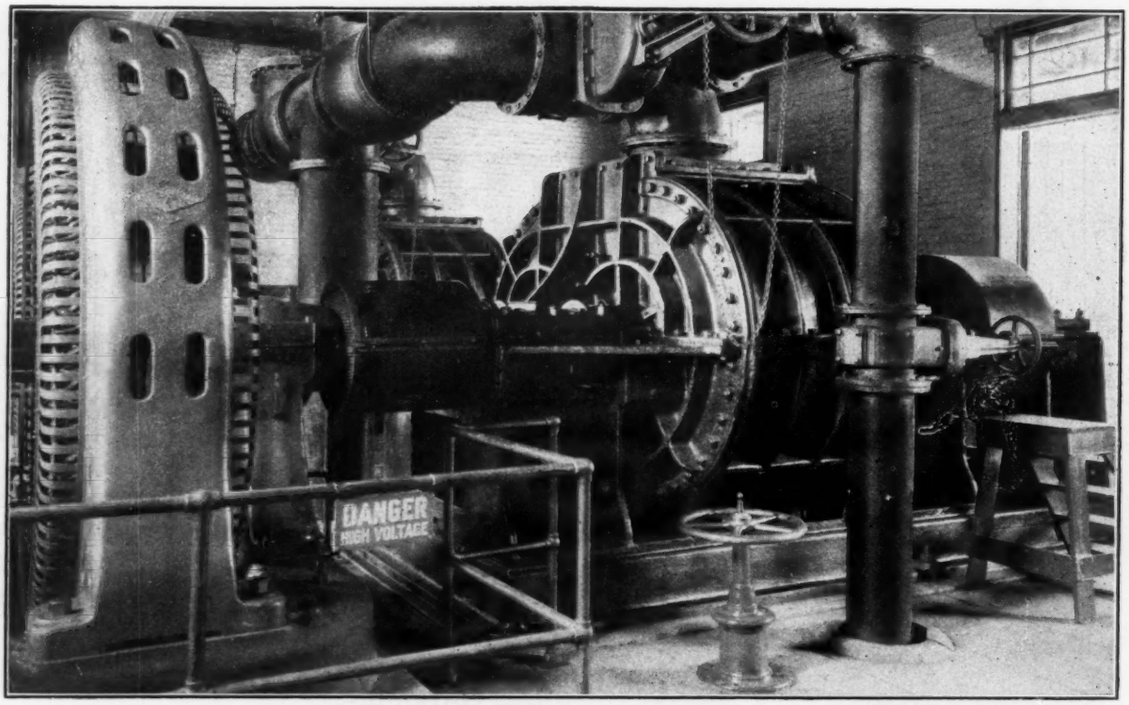
General Offices: Milwaukee, Wisconsin

District Offices at New York, Pittsburgh, Tulsa, Houston, Los Angeles

SMITHSTEEL

GAS LINE PIPE

ROOTS



ROOTS

Two Roots No. 12 Gas Boosters installed at a large Central Western Gas Plant operating with 650 H.P. synchronous motor drive and with 8 to 10 lbs. pressure.

DEPENDABLE SERVICE

—A Characteristic ROOTS Feature

Satisfactory Service is built in every ROOTS Product. From conception to finished article, every detail is carefully wrought and jealously inspected.

Oversize shafts, extra heavy ribbed cases, adjustable, self-oiling bearings, sturdy gears, exact clearances and no internal friction, are reasons for ROOTS Dependable Service.

Secure the best by specifying that it be a ROOTS product—regardless of whether you need a Gas Pump, Meter, Vacuum Pump, Liquid Pump, Blowers, Gates, Valves, or Couplings.

The P. H. & F. M. ROOTS CO.

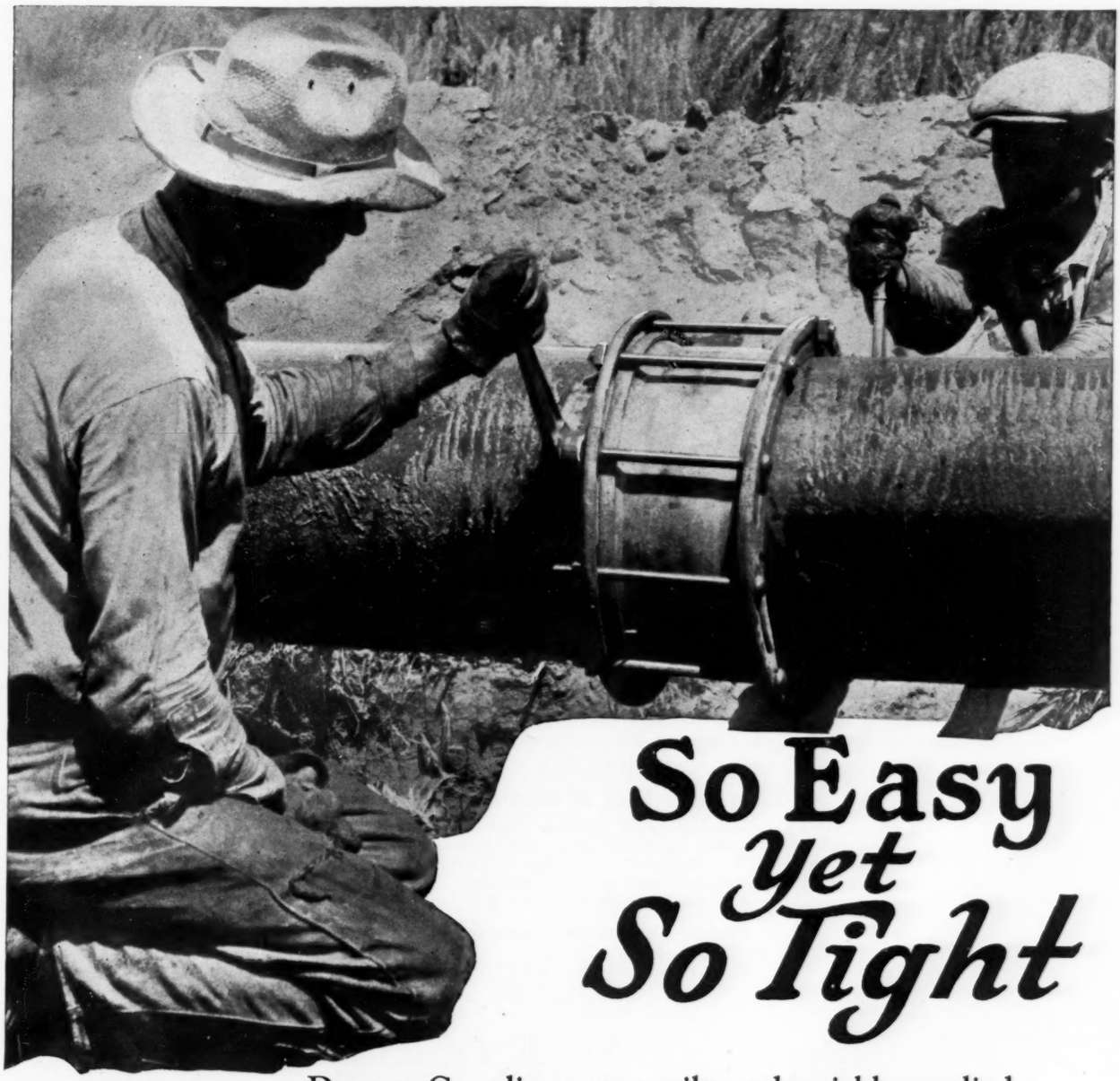
CHICAGO
Peoples Gas Building

CONNERSVILLE, INDIANA

NEW YORK
120 Liberty Street

WESTERN REPRESENTATIVE: SUTOR & COMPANY, 680 South Central Avenue, Los Angeles, California

Originators of the Double Impeller Rotary Principle

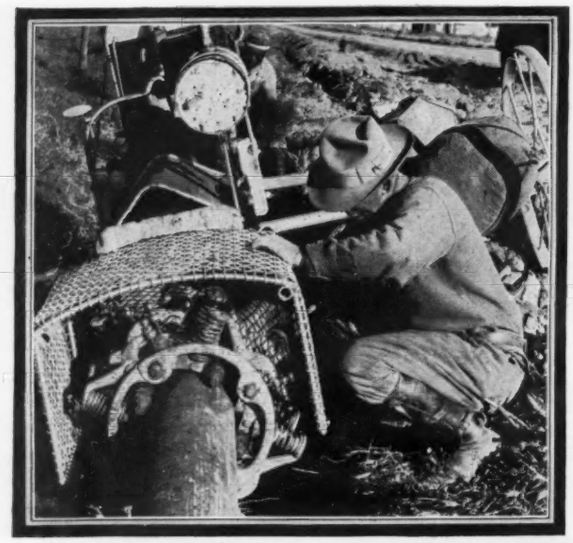


So Easy *Yet* So Tight

Dresser Couplings are easily and quickly applied. They take care of expansion and contraction and will remain permanently tight.

S. R. DRESSER MFG. CO., Bradford, Pa.

DRESSER Couplings Dominate



Reconditioning Old Gas Lines *with*

Mc Everlast Protective Coatings and Wrapper—*Applied Cold.*

CORRODED—deeply pitted—this section of gas transmission line of the Industrial Fuel and Supply Co., affiliated with the Southern Counties Gas Co. of California, is being salvaged for years of further use. McEverlast electrolysis-proof coatings and wrapper do the trick—make old pipe lines like new ones—save the expense of new pipe!

The soil in which this pipe was buried is so strongly alkaline that it looks almost white. Yet engineers of this big gas company are convinced McEverlast Electrolysis Proof Coating and Wrapper will keep corrosion down to a minimum.

Eliminates Risk of Burns!—Permits Smaller Crews!

It isn't necessary to heat McEverlast coatings. This eliminates accidental burns—work interruptions—costly delays! This cold application allows smaller crews, lower expenses. MvEverlast coatings composed chiefly of live Bermudez asphalt and Gilsonite, held in suspension by special process. Properly applied, they form maximum resistance to all forms of corrosion and electrolysis—leave a tough, smooth surface which won't crack or chip.

Some Extensive Users of McEverlast Protective Coatings

Southern California Gas Company; Shell Company of California; Pan-American Petroleum Company; Sun Oil Company; California Petroleum Company; General Petroleum Company; California Eastern Oil Company; Chanslor-Canfield Midway Company; Union Pacific Railway; Hercules Gasoline Company; City of Los Angeles, and twenty-one other cities in the Southwest.

Withstand Remarkable Test

Pipe protected with one McEverlast Penetration Coat and two coats of Electrolysis - Proof, subjected to a continuous 90 day test with 6 volt potential, 30 days in 5% salt solution and remainder in heavy alkaline soils. At the end of this extraordinary test there was no sign of the coatings breaking down. Send for illustrated descriptive booklet giving details of this test and other interesting information.

Applying Mc Everlast Osnaburg Wrapper. At the right, applying electroloysis proof coating. Note absence of heating apparatus.

Mc EVERLAST, INC.
[T.M.REG.]

(Formerly Everlasting Paint and Sales Co.)

1110 Board of Trade Bldg., Los Angeles, Calif.

Branch Office: 1314 Magnolia Bldg., Dallas, Texas

U. G. I.

STANDS FOR AND SQUARELY BEHIND CERTAIN THINGS

VIZ :

UNITED in its cooperative effort to give its clients and customers the best engineering, technical advice and materials possible, in order to produce the greatest value per customer-dollar expended.

GAS The mainstay of American household comfort. Our technical and business staffs are without superiors in their knowledge of and application to this fundamental industry. They are at your service.

IMPROVEMENT This has been the watchword and the aim of our organization since its inception. The results are so well known and far-reaching that they are common knowledge. The improvements worked out by our staff mean betterments for you.

THE U. G. I. CONTRACTING COMPANY

Division of

United Engineers & Constructors Inc.

Dwight P. Robinson, *Pres.*

Principal Office—Philadelphia

Chicago **Atlanta**

UNITED FOR GAS INDUSTRY IMPROVEMENT

The Pacific Announces a New Line

of Unit Gas Furnaces Approved by the American Gas Association

This furnace is round instead of square. As a result there are no corners and no dead air spaces. There is better circulation because of the absence of corners. Consequently, heating is accomplished more quickly. The heating element is completely welded throughout, is gas tight, and permits no combustion fumes to escape. The heating unit is of 20-gauge pure Ingot Iron Toncan metal, known for its rust resisting qualities.

Pacific has devoted years to the development of this new furnace which now carries the BLUE STAR OF APPROVAL. Back of this approval is our 15 year old reputation as the leading and largest gas heating organization in the West.

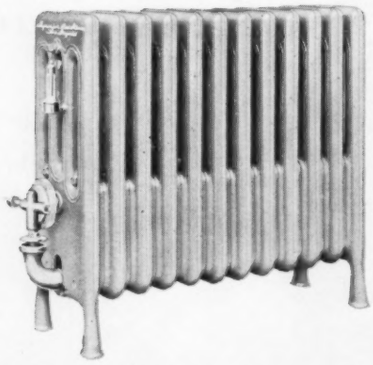
New Multi-Tubular Burner

Each burner has its independent injection of gas. Primary air for combustion is directly siphoned at each individual burner. There is no need for adjusting of the gas and air for combustion as this new Pacific Burner is scientifically designed to automatically give the correct proportion of air to gas. This results in complete combustion and a high temperature flame of proven economy. No soot. No odors.

Pacific Unvented Gas Steam Radiators Also Approved

By selling the Complete Pacific Line You Have the Advantage.

Because with the complete Pacific line you can offer the correct solution to every heating problem. Where other heating salesmen stress their particular appliance, our agent selects from a full line the appliance best suited. We have a real money making proposition. Write for particulars.



And NOW, Pacific Unvented Gas Steam Radiators, furnished in 4 column pattern 26, 32 and 38 inches high, carry A. G. A. BLUE STAR SEAL OF APPROVAL. In addition to this approval, the Pacific Gas Steam Radiators are approved by the Underwriters' Laboratories.

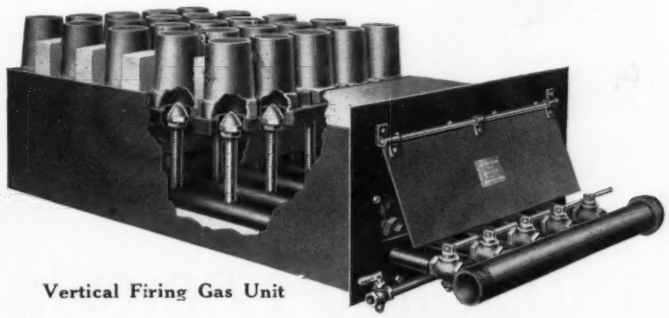
Pacific Gas Radiator

Gas Heating **Company** *Headquarters*

Roseberry and Walter Streets, Huntington Park, California

MANUFACTURERS *of* EVERY TYPE *of* GAS HEATING APPLIANCE

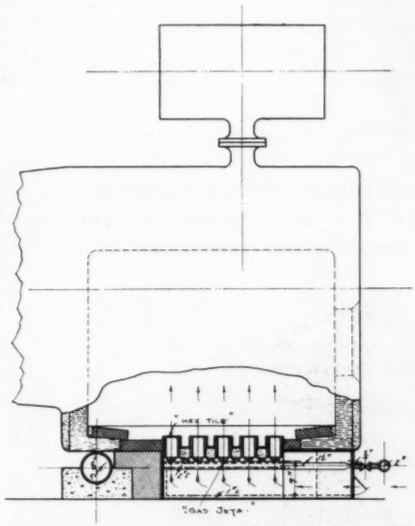
THE LEAHY MULTI-JET UNIT
for
Oil Field Boilers



Vertical Firing Gas Unit

Vertical Firing

Under Portable Type Locomotive Boilers



Side Elevation Showing Method of Installing Vertical Firing Unit under Oil Field Portable Type Locomotive Boiler.

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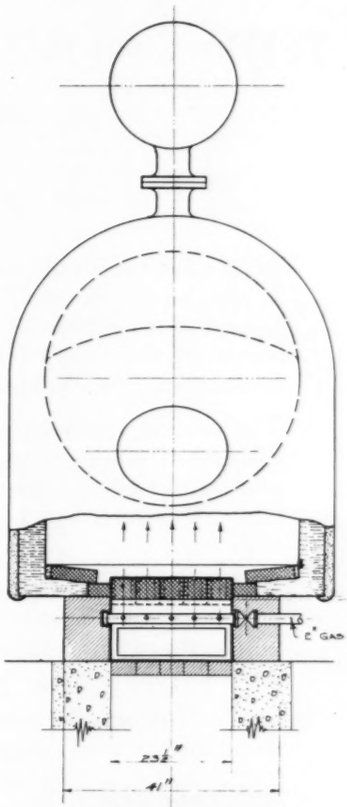
4—Complete combustion and slow travel of the gases within the fire-box and boiler flues.
5—Low stack temperatures.
6—A burner that will develop high overloads on very low gas pressures.
7—In emergency needs oil can be used in conjunction with the unit.



Front View Showing Vertical Firing Unit in position.

Note: Compactness of unit, simplicity of installation, and few brick required.

Write for Bulletin 19B and 19C

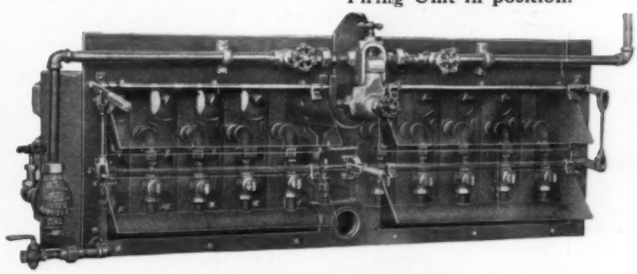
For the Burning of Gas and Oil under all types of Oil Field Boilers we recommend

Horizontal Firing

For Return Tubular Boilers and all types of Portable Locomotive Boilers.

For a detailed description of our Horizontal Units

Request Bulletins 19 A and 19 D



Horizontal Unit—Combination Oil and Gas

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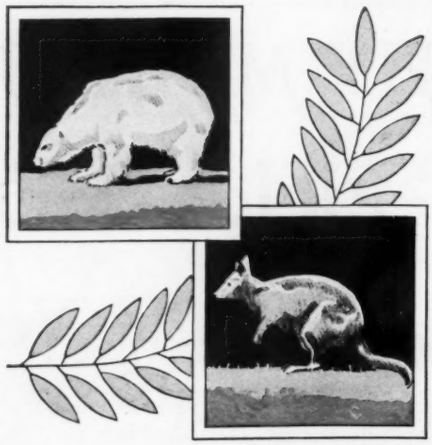
Established in 1902



From Nova Zembla to Cape Leeuwin

Welsbach

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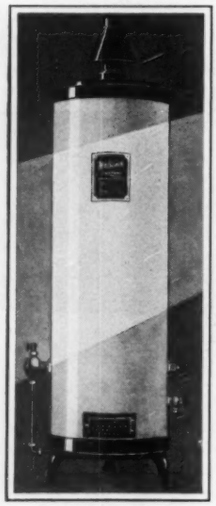

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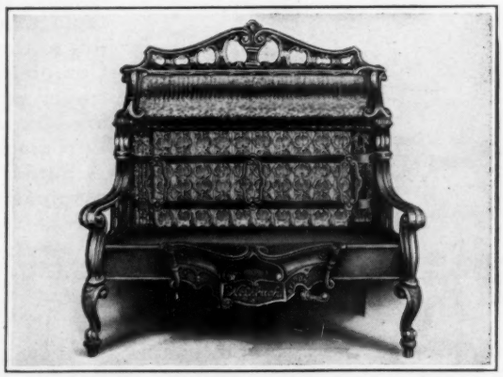

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JAY JENKINS
Publisher

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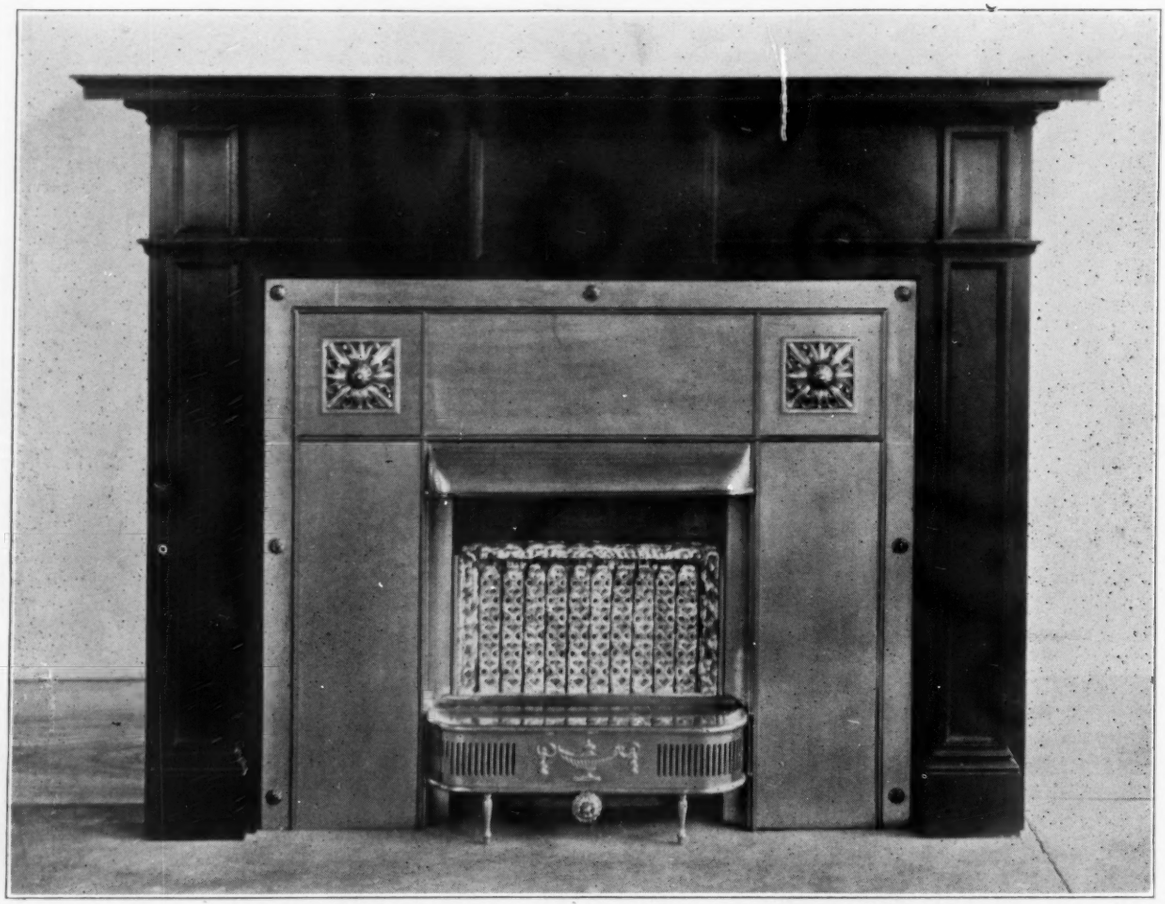

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A Monthly Journal of the Gas, Gas Appliance and Natural Gasoline Industries in *Western America*

SAN FRANCISCO **LOS ANGELES** **DALLAS**

The Public Relations Man *and the* Editor

By WALTER M. HARRISON

President, American Society of Newspaper Editors

UTILITY men will benefit from a reading of Mr. Harrison's address, delivered October 10 before the American Gas Association convention at Atlantic City. The author holds a position in the forefront of the editorial craft, as evidenced in his selection as president of the American Society of Newspaper Editors. When he says "Keep the propaganda coming—but give its source," he may be presumed to speak for his profession. What he has to say concerning newspaper ethics, and the right and wrong way to "publicise" a utility merits attention from the leaders of the utility industry as well as from those actively engaged in telling the utility's story.—*Editor.*

MY position on your program is by virtue of the place I occupy as president of the American Society of Newspaper Editors.

To establish a premise for my appearance, I should explain that the American Society of Newspaper Editors is an organization of some 200 directing editors, or, to be more explicit, editors-in-chief, editorial editors and managing editors having immediate charge of editorial or news policies of daily newspapers in cities of not less than 50,000 population.

Theodore Roosevelt expressed the motive behind this society of editors when he said: "Every man owes something of his time to the upbuilding of the profession of which he is a part."

Ours is an infant organization, launched six years ago for the purpose of extending the service of journalism and improving the standards of newspaper men. We are not propagandists.

In our annual meetings we do try to consider the important problems of the trade and pass our discussions along to the country in a form that may be of value to editors who care to study our deliberations. We aim to be human instead of hypocritical. We acknowledge that the highest ethical standards that can be set up constitute a mark to be shot at by the whole fraternity, but we do not expect perfection among the human beings of our group, or yours.

Among the "Canons of Journalism," the code of ethics of the society, are these sentences of especial interest to you:

"A journalist who uses his power for any selfish or otherwise unworthy purpose is faithless to a high trust.

"Freedom from all obligations except that of fidelity to the public interest is vital.

"Promotion of any private interest contrary to the general welfare, for whatever reason, is not compatible with honest journalism.

"News reports should be free from bias or opinion of any kind.

"Good faith with the reader is the foundation of all journalism worthy of the name.

"No editor who uses his newspaper to promote his own interests or the interest of a public utility, private corporation or politician, from which he receives bribes in money, jobs or favors, is worthy the name.

"No editor or reporter should be in the employ of any organization except the newspaper with which he is associated."

This last is of particular importance it seems to me, because some of your public relations men have recommended the part time employment of reporters and sub-editors for utility publicity purposes. Such connections cannot be held long without exposure. Ethical newspapers discharge men so employed when the fact becomes known, the newspaper feels that it has been duped by the utility and is consequently reticent in its relations with the offending corporation.

If every editor were sufficiently careful with his publication to see to it that no bias or opinion without responsibility is expressed in his medium, the appalling total of the day's propaganda might pass through the editorial offices of the world without the slightest danger to the peace of the country, the morals of the newspapers of the equanimity of the Federal Trade Commission.

If all newspapers were perfect, there would be no need for our ethical society. If all newspaper men were perfect, there would be no excuse for an effort to raise the standards of journalism. We admit there are many newspapers which have a low idea of the importance of their mission, but we insist that the great majority of the American press is clean and that the trend is toward the light and the right. It is our purpose to hold the torch high.

I am not afraid of your propaganda for private ownership of electricity, of gas and water rights.

I am not afraid of Gifford Pinchot's propaganda for public ownership.

(Continued on Page 42)

Employees of the Public Service Company of Colorado's gas fitting department

Organizing *for a* Change-over

By ROBERT H. TAYLOR, *Engineer of Gas Utilization*
Public Service Company

THE activities of the gas operating department of the Public Service Company of Colorado, during the period from the franchise election in February, 1927, to the date of the turn-on of natural gas in Denver, June 23, 1928, were described in an article by Geo. Wehrle, "Natural Gas Comes to Denver," which appeared in the July, 1928 issue of *Western Gas*. The following article attempts to describe in more or less detail the organization and methods followed in changing over the customers' appliances to natural gas, particularly in regard to the work done by the utilization department.

The organization of the gas operating department of the Public Service Company of Colorado consists of three general groups: production, distribution, and utilization. The field of the production department terminates with the delivery of the gas to the main distribution system. The distribution department has jurisdiction from this point to the meter cock. From here on to the appliance, the gas is under the jurisdiction of the utilization department. It was a logical action to assign the change-over work to this latter division.

400 B.T.U. TO 1050 B.T.U

Immediately following the franchise grant, the utilization department began planning its campaign for the change-over. Much of the work was pioneering in character, for never before in the history of the gas industry was there so drastic a change in the thermal value of a gas sold to 70,000 consumers. The manufactured gas supplied had a therman value of 400 B.t.u. per cubic foot under standard conditions, while the natural gas on the same basis had a thermal value of 1050 B.t.u. per cubic foot. Physical characteristics of the two gases varied widely. The old gas had a high hydrogen content while the natural gas had a high methane content. The rate of flame propagation of the manufactured gas was high and the flame sharp. The tendency of the flame was to back-fire rather than to blow off the burner ports. The natural gas on the other hand has a low rate of flame propagation about one-third as high as the old gas and the tendency is to blow off the burner ports rather than to backfire.

The natural gas flame is soft in character compared to the sharp flame of the manufactured gas. The old gas required 3.5 cubic feet of air per cubic foot of gas for complete combustion while the natural gas requires 10 cubic feet or air. To the experienced gas man these facts are significant. To the utilization department they indicated that careful planning was necessary in order to make the change-over a success.

The first question which arose was not, "How many customers are on the mains?" but "What appliances are on the mains?" Customer inspections had been made in the past, not so much concerned with the exact specifications of the customer's appliance as with the gas consumption of the appliance. Some districts had not an inspection for some time; other districts had had recent inspections. Realizing the necessity for reliable information regarding customers' appliances, the decision was made to make a new, complete inspection of all appliances in the city, giving special attention to the exact manufacturer name plate specification of each appliance, where obtainable, and otherwise to securing information complete enough to enable us to order the orifices necessary for conversion. In addition to the above, information was obtained as to the number of stories and construction of the building (brick, frame, etc.) use of building, size and condition of gas service, size and condition of house governor (if any installed), size, make, number and condition of meter, size and approximate length fuel run. Also information as to fuel used in heating building, violation of company and city rules regarding hazardous installations, etc. All of this information was placed on 4x6 cards specially printed for this work.

The results of the above survey gave the information desired and in addition gave information as to the location of worn-out appliances. These tips were turned over to the new business department and resulted in many good sales.

Information obtained as to appliances was tabulated according to manufacturer and orifice size required. Orders were placed for as many orifices (plug and cap) as were manufactured. Through the inspection many appliances were discovered that were so old that the manufacturer had ceased to operate and the records of their appliances were lost in the mists of antiquity. In such cases

who prepared customers' appliances for the shift to natural gas service in Denver.

from 400 B.t.u. *to* 1050 B.t.u. Gas

and ARTHUR J. HIESTER, *Gas Utilization Department*
of Colorado, Denver, Colo.

special adapters to be used in place of orifices were made locally. All orifices ordered were drilled with a No. 60 drill. Manufacturers were requested to ship the orifices sized in separate packages. In many cases this request was followed and in some cases ignored. As a result of the latter, many needless hours of work were necessary to sort and classify the orifices.

Following receipt of the orifices from manufacturers, like orifices were sorted into bins tagged with the appliances for which they were intended. It was found as a result of appliance and orifice classification that several different makes of appliances had identical orifices. Therefore, one bin was used for the orifice common to these appliances and a tag on the bin recorded the names and sizes of the common or equivalent appliances.

To facilitate and expedite the actual work of the change-over crews, a separate "orifice shop" was created. All inspection cards passed to this shop where the orifices specified on the card were placed in heavy 4x6 envelopes. The inspection card was fastened securely to the envelope and the envelopes bundled into lots, each lot consisting of the houses or customers in one complete city block (all four sides.)

While the above work was in progress, the shop force of normally about 80 men was being built up to the working strength required for the change-over. At the start of the change-over 345 men were on the shop pay-roll.

We realized, as every gas man well knows, that it is an impossibility to hire 265 experienced gas men capable of satisfactorily adjusting all kinds of gas appliances. The only way that such a group of practically all green men could receive training in the short space of time allotted to this work was by the establishment of a training school. Every than hired, as well as the old employees. was put through the school to make absolutely sure that he was capable. Other tests were given each man to determine his honesty, reliability and courtesy.

The school was established in the company warehouse and some 30 representative types of domestic appliances were set up and connected to the gas lines. These appliances were connected in such a manner that normal troubles, such as, stuck, binding, or D. R. meters could be simulated, as well as trapped piping, stopped or water-logged services, etc.

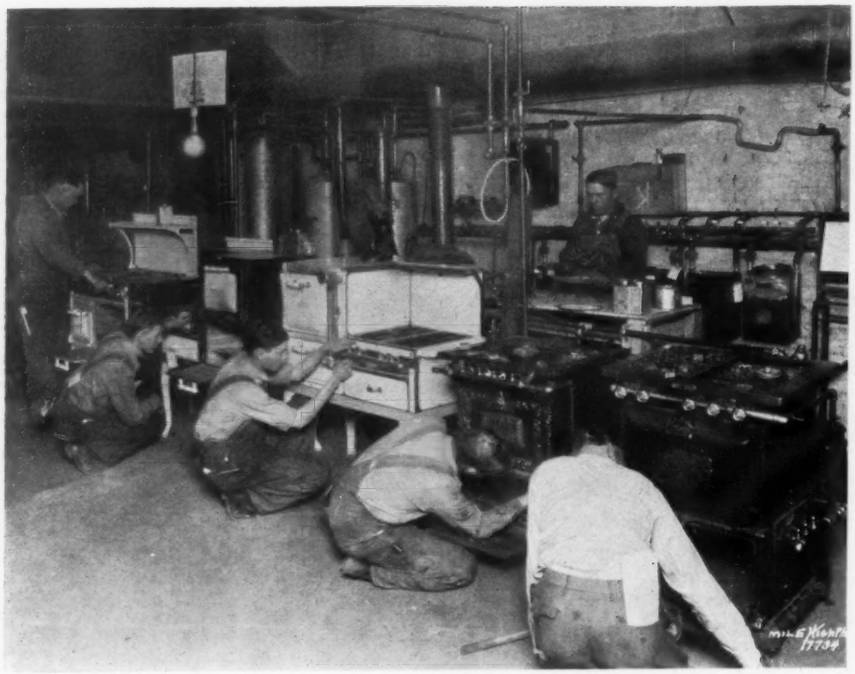
In order that the men in training might have an idea of natural gas, with its peculiar characteristics, an artificial "natural" gas was made by bubbling the 400 B.t.u. manufactured gas through high-test gasoline. The resulting gas of about 950 B.t.u. had practically all of the characteristics of true natural gas, except that a sharper flame could be obtained. This artificial natural gas was so connected that it could be turned into every appliance.

As each man was hired, he was sent out as a fitter's helper for two or three days, so that he would become familiar with the various fittings and tools used in appliance installation work. During this period, various character tests were made and if the candidate satisfactorily passed the tests he was assigned to the gas school. As part of the training, the candidate was sent out on "dummy complaints." Without the man's knowledge, fictitious complaints were planned on customers' premises (usually employees' houses). In most cases, the housewife was the complainant and she was selected for her ability as an actress. Sometimes the appliance was put out of adjustment; other times not. In many cases, however, the green service man and the company were soundly berated and vilified. The reaction of the service man to this "hard-boiled" lecture was later reported to the service department, as well as other information regarding the adjustment of the complaint, workmanship of the service man, etc. Other "dummy complaints," ingenious in character, were used to test the reactions of the men.

INTENSIVE SCHOOLING

All problems encountered by fitters and troublemen were presented in the school in such a condensed manner, duplications and nonessentials being eliminated, that in four weeks (the average duration of the schooling for each group) the man had received as much varied practical experience as would normally be obtained in the course of several months to a year of routine shop practice.

The instructors would reach the school in the morning before the class and arrange trouble on the various appliances for the class to diagnose and remedy. For example, a range burner would be inverted, ports plugged on



LEFT: One corner of the natural gas training school through which appliance adjusters of Denver Company were instructed in details of servicing for natural gas change-over. The school terminated in a written examination for all who completed the course.

another, an orifice blanked off on another, air adjustment changed on another. Rags were stuffed in oven flues, blinds placed in fuel run unions, etc. The class, working on different appliances under the close observation of the instructor, located the trouble and adjusted the appliance. The instructor noted the rapidity with which the individual located the trouble and the ease and skill with which the adjustment was made. Instructors gave special attention to the student, noting whether he diagnosed the trouble in the regular manner or simply found it through a fortunate guess. After the men had become familiar with the methods of adjustment of the manufactured gas, the artificial natural gas noted above was turned into the line and similar adjustments made as those required with manufactured gas.

A WRITTEN EXAMINATION

After the men had shown sufficient proficiency in what might be termed laboratory work, they were given a written examination. This examination covered in detail the various troubles encountered in actual work and the adjustment necessary to remedy them. Examination questions were drawn up by the instructors and covered troubles and adjustments encountered and made during school training. Considerable time and study were given to the preparation of these questions and the final draft represented the best of the knowledge and experience of the shop organization.

After the men had finished their school work, they were sent out to change the burners on space heaters. This work was done in May following the close of the heating season, continued until the date of change-over when it was suspended. Later in the change-over program, a few were handled, but the majority of the burners were converted after the change-over work was completed.

While the shop men were busy gathering their forces for the change-over drive, the distribution and engineering departments were engaged in dividing the city into districts so that the change-over could proceed rapidly and smoothly when natural gas was turned into the mains. The city was divided into nine districts, following more or less natural geographical lines in such a way that existing main cuts and valves could be utilized to the best advantage. To complete the districting, 45 main cuts were made (20-2-inch, 2-3-inch, 17-4-inch, 5-6-inch, 1-8-inch) and 5 valves installed (1-6-inch, 1-10-inch, 2-12-inch, 1-16-inch). The districts were made so that natural gas could be introduced into each in succession without interfering with the flow of manufactured gas into the districts not yet converted. The estimated number of gas customers in each district varied from 12,448 in the largest to 3,520 in the smallest.

After the districts had been definitely established, each was divided into 20 precincts, with approximately the same number of customers in each precinct. The blocks in each precinct were numbered and these numbers given to the orifice shop where the inspection cards with orifices had been grouped. The block groups were assembled in heavy paper sacks bearing the number of the district, precinct, and block. All block groups in a precinct were assembled in a carton, labeled with district and number, and stored ready for the actual turn-on in that particular district.

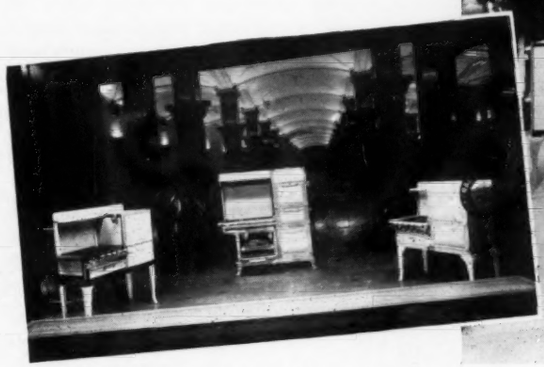
During the period that the utilization and distribution departments were busy with their plans for the change-over, the production department was arranging a schedule so that gas production could be reduced as each district was turned over to natural gas without impairing the efficiency of the gas make. This involved an interesting problem, as it was essential that the ratio of coal gas and water gas be kept constant as the districts were changed. One proof of the able work of the production department is that the plant was shut down on August 1 with enough gas to last over a period of 24 hours, according to the department's prediction, and this guess came within 14 minutes of schedule, the last of the old gas being consumed just that length of time ahead of the zero hour.

No matter how well prepared the company might have been for the change-over, it would have been only partially successful had not complete information been given the consumers concerned. Customer information and education was a paramount phase of the program. It was realized that each customer, regardless of type or usage of gas service, should be well informed as to the new fuel and the procedures necessary in the change-over program.

With this in mind, newspaper display advertisements appeared from time to time during the construction of the transmission line from Amarillo to Denver. The first advertisements dealt in generalities, giving interesting facts concerning the new gas and stressing economic factors in the use of the new fuel. As the time approached for the turn-on of natural gas, newspaper advertising copy became more frequent and more specific in character. The insertions stressed the point that every orifice must be changed on every burner and further cautioned the customer against the use of gas water heater, space heater and gas oven between the period of natural gas

(*Continued on Page 45*)

RIGHT: A section of the commercial sales floor in the New Orleans Public Service Inc. modern office home, now occupied for about a year. BELOW: A typical New Orleans gas range window display, with sales floor shown in background.



Friday *the* Thirteenth -- *a* Sales Idea

By S. L. DRUMM

New Orleans Public Service Inc.

FRIDAY is ordinarily known as the sixth day of the week. However, there is a greater significance attached to this particular day than to any other. The ancient Scandinavians, Anglo-Saxons and Germans all named this day from a goddess of the character of the Roman Venus, and it was regarded as a lucky day. The Mohammedans observe Friday as their day of worship. The Roman Catholic Church, the Greek Church and the Angelican Church recognize it as a day of abstinence, in memory of the crucifix of Christ. Hence, Friday has come to be regarded as an unlucky day. It is sometimes called "hangman's day." as the day commonly selected for the execution of criminals.

Thirteen is commonly defined as the number following twelve. It has, however, a more important meaning. It is the unluckiest number known—and is indeed an omen of misfortune.

Hence, Friday the Thirteenth has more than one reason for being an unlucky day. It is true there are not many Friday the thirteenths—and we mortals heave a sigh of relief when such a day has gone into the past. It would be folly, for instance, to pass under a ladder on Friday the thirteenth or scoff at the idea of a black cat crossing one's path. More caution is necessary—or one takes such chances at his own risk.

But lo! the tables have been turned. Friday the thirteenth has become a day of opportunity—a day of unusual values—a really "lucky day"—'way down South in Nu Awleans.' Due to the ingenuity and foresight of the assistant commercial manager of the New Orleans Public Service Inc., E. N. Avegno, a plan to capitalize on this day was worked out.

It was proposed that this apparently "hard luck" day be used to increase gas range sales. Certainly, interest could be aroused, and if the desire was created—nothing could then stand in the way of a successful sales campaign. With this idea in mind, the first Friday the thirteenth sale was put on during the week beginning Monday, August 8th and ending Friday, August the 13th, 1926. There is no claim made that this was the first Friday the 13th sale ever put on in such a fashion—but it is claimed that it was an original idea with the New Orleans Public Service Inc., and the first Friday the 13th sale ever to be used in New Orleans.

Therefore, with the superstitious slogan "Friday the 13th" as the sale motto—the following attractive inducements were offered to the public to create a desire for a new gas range:

13 cents Down
13 Months to pay
13 per cent Discount (cash purchase)
13 Feet of free piping.

The above inducements are self-explanatory and are quite a divergence from the regular prices and terms. The regular prices and terms call for a 10 per cent (of purchase price) down payment—11 months to pay—5 per cent discount (cash purchase) and 5 feet of free piping. It is apparent that certain sales resistance was broken down and a natural stimulus built up.

In handling a sale of this character no advance information was given the salesmen or the public. Immediately preceding the sale a concerted newspaper advertising campaign was worked out and the window displays featured the Friday the 13th sale. Due to the advertising being somewhat different from the usual special sale ad—immediate results were obtained. A large percentage of the sales were made from the display floor, which bears out the fact that the advertising apparently aroused interest and was read by most of the housewives. The unusual inducements of the sale were also an incentive for the outside salesmen to call back on prospective customers who could not be sold on previous visits. Very encouraging results were obtained and there was a material

(Continued on Page 56)

Salesmen's Compensation

By C. A. BIGLER

*Superintendent, Domestic Gas Division, Public Service Company of Colorado, Denver, Colorado**

THIS subject has probably developed more keen human interest and discussion among public utility commercial men than any other one topic. Salesmen's compensation presents serious problems in any industry, but more especially so in central station merchandising, as it must be handled from a number of different viewpoints, such as large volume and small volume business, on-peak and off-peak loads, desirable and undesirable merchandising business, profitable and less profitable revenue, load-building, good-will value and others.

In the hope of accomplishing better results various plans and schemes have been devised, both for revenue and for merchandise production, such as straight salary, straight commission, a combination of both, and elaborate point systems. Theoretically, many appear to be perfect, but in actual practice "bugs" soon develop and to say that the plan here outlined as perfect would be far-fetched.

Fundamentally, a salesman to be successful must possess initiative, and his work is therefore constructive and original and not of a routine or detail nature. No two sales were ever made alike any more than any two faces were ever created alike; therefore, any possibility of sales work becoming routine is eliminated. Sales superintendents and field supervisors cannot be with their salesmen continually to instruct them when, how and what to say and do in each sale. This the salesman must study out for himself, and any scheme which tends to broaden his viewpoint so that he knows good business from poor can easily become the determining factor in the success or failure of the service he renders.

Since self-preservation is the first law of nature, a compensation program must be set up which recognizes and rewards good judgment and actions on the part of the salesmen. With the idea in mind of making him a partner in the business, so to speak, causing him to see the company's side of each transaction as well as his own, a plan was formulated by Roy G. Munroe, gas new business manager of the Public Service Company of Colorado, which has great flexibility and which appears to fit all circumstances and conditions. This plan was put into operation in Denver on January 1, this year, after most careful consideration by G. B. Buck, general commercial manager, and Clare N. Stannard, vice-president and general manager. It consists of:

First: A substantial monthly drawing account or guaranteed minimum against which all commissions are applied.

Second: A revenue or load-building commission varying in amount according to the gas revenue value of the equipment sold, taking into consideration annual gross revenue, annual net revenue, and load characteristics.

Third: A percentage of the gross profit resulting from merchandising sales.

Fourth: A percentage of all cash down-payments with orders.

Fifth: Special temporary bonuses or penalties applied or taken off at any time for such purposes as special drives on certain appliances, introduction of new equipment, the disposition of obsolete stock, or the penalizing of certain undesirable merchandising activities.

Thomas F. Kennedy, the new business chief of our organization, is a believer in intensive, specialized solicitation. Therefore, in Denver, lines are drawn sharply between the various types of business. Gas and electric solicitation is carried on by separate new business departments and each class of business is solicited by specialists. In the gas new business department we have the domestic gas, house heating, industrial fuel and hotel and restaurant division. The plan here outlined is used in all four of these divisions, 65 gas territory sales representatives being paid under it. It appears to be producing equally desirable results in the solicitation of these widely differing classes of business.

During 25 years of new business activity in the Denver commercial department, a number of salesmen's compensation plans have been used, including a point system based wholly upon the annual gross gas revenue value of each sale, a revenue commission based altogether upon the actual increased gross gas revenue of the company month by month, a merchandise commission based wholly upon merchandise sales without regard to revenue values, and various combinations of the above.

The point system premiumized to a fine point additional gas revenue of the best load-characteristics and profitableness, but failed to provide sufficient incentive for profitable merchandising.

The revenue commission paid upon actual company gas revenue increases subjected the salesmen to fluctuations in their compensations out of all proportion to the variations in their effectiveness.

The merchandise commission plan yielded splendid improvements in merchandising profits, but detracted from desirable load-building and introductory activities.

All of these plans, together with various combinations, were made effective in the production of splendid results, largely through excellence of management, and the enthusiasm, brains and industry of an extremely capable body of salesmen.

Nevertheless, they all possess inherent faults which our latest plan seeks to rectify. The most serious of these appeared to us to be the merchandising commission. Why should the sale of a $100 appliance producing valuable gas revenue and sold against severe sales resistance earn only one-half the commission paid for the sale of a $200 appliance possessing a general customer acceptance with but little or no load-building value?

GROSS PROFIT COMMISSION

Our first step then has been to discard the merchandise sales commission, replacing it with a commission on merchandise gross profit. By gross profit is meant the difference between the selling price and the costs of appliances and installations. These costs include such items as freight, cartage and fitting-shop expenses, but do not cover such expenses as commissions, office expense advertising, etc. Refunds resulting from the adjusting of misunderstandings with

(*Continued on Page 44*)

* Presented before the Commercial Section of the American Gas Association at the tenth annual A. G. A. convention, Atlantic City, in October.

GAS SALES GROW not only through intensively promoting the use of existing services, but by extensions into virgin territory. Such extensions must be made early if competitive fuels are to be forestalled—yet in the past the expense attached to this type of necessary pioneering has often been prohibitive.

NOW COMES the natural gasoline operator with a solution. During the past two years or more there has been popularized the use of a liquid fuel made up of propane and butane, which gasifies on the release of confining pressure and burns in ordinary gas appliances with virtually the same characteristics as domestic gas.

NATURAL GASOLINE plants in several sections of the country have equipped to extract these extremely volatile hydrocarbons. WESTERN GAS publishes in these pages an account of "Stargas" and "Skelgas"—two types of this efficient fuel.

Lone Star Serves By-Product *of* Its Own Make *to* Isolated Users

By J. R. JARVIS
Superintendent Gasoline Plants
Lone Star Gas Company

EVERY gas distributor has many prospective consumers located so far away from the gas mains that it is not profitable to serve them. These people desire the conveniences of a gas fuel and will sometimes go to great expense to lay their own service lines. Some, too far away to do this use electricity for cooking at even greater expense. It has long been a problem with gas companies as to how to handle these prospects.

In order to take care of these prospective consumers the Lone Star Gas Company is manufacturing and distributing a fuel known as *Stargas* that is handled in steel cylinders and burns in all gas appliances. In many ways it is superior to natural and artificial gas. This fuel is pure propane that has a heating value of 2519 B.t.u. per cubic foot, mixed with a small amount of pure butane that has a heating value of 3274 B.t.u. per cubic foot. The average heating value of the resulting mixture will vary from 2600 B.t.u. to 2650 B.t.u. per cubic foot. A cylinder containing 90 pounds of this mixture contains approximately 2,000,000 B.t.u.

This mixture of butane and propane, known as *Stargas* is liquefied and charged into steel cylinders under pressure. It must be remembered that when this pressure is released by opening the valve on top of the cylinder the liquid changes to a gas and passes out of the cylinder in this state. These cylinders are then weighed, tagged and shipped by freight or truck to the town nearest the consumer. They are then hauled to his premises, set in a steel cabinet outside the house and connected to his service line through a system of valves and a regulator contained in the cabinet. This apparatus is shown in the attached sketch and is known as a "House Service Installation."

This house service installation is very simple both in construction and operation. It consists of two cylinders of *Stargas* (1) (containing 90 pounds of liquid each) manifolded to the regulator (7) in such a manner that one cylinder may be cut off with suitable valves (2 and 4) while the other cylinder is being used. The regulator reduces the gas pressure (20 lbs. to 150 lbs.) in the cylinder to 4 ounces pressure, which pressure has been found to be best suited to domestic service. The apparatus as a whole has been made to conform to the specifications of the National Board of Fire Underwriters. Every effort has been made to make the installation convenient, safe and attractive in appearance. It will be located outside the customers house directly against the wall of the kitchen convenient to the kitchen range and water heater. It should be convenient for the housewife who has to turn off and on the cylinder valves and line valves as the cylinders are emptied. It also should be convenient to the road or street to make it easily accessible to the service man who has to change cylinders.

The purpose of the cabinet is to protect the apparatus from the weather and from the tampering hands of children and other irresponsible people who may damage the equipment. This cabinet is made of Toncan Iron which insures a long life in any atmosphere likely to be encountered. The finished cabinet is painted green, a color that will harmonize with the shrubbery and will also look well with any color scheme that is used on the building to which it is attached. The two doors in the front (not shown in the sketch) have louvres in the top and bottom that will keep the cabinet cool in the summer and eliminate the danger of gas collecting in it. The doors will be locked, the customer retaining the keys. The service man will have a master key to fit all cabinets in his district.

The cylinders (1) will fit snugly in the cabinet but will not touch the walls. This will allow a free circulation of air around them at all times. These cylinders are 13 inches in diameter and 45 inches high and have a gross capacity of 24 gallons; they weigh 120 pounds empty and 210 pounds filled with *Stargas*. They are made to conform to the Interstate Commerce Commission's specification No. 26-150 requiring an air test of 150 pounds per square inch and also a water test of 600 pounds per square inch. Their bursting strength is from 1425 to 1500 pounds per square inch. They have two ⅛-inch soft plugs in the top and two in the bottom that will melt at 165° F. At this temperature the cylinder will have less than 300 pounds pressure, which will give a factor of safety of five under even this extreme condition. Under working conditions of 20 pounds to 140 pounds the factor of safety will be more than 10. The cylinder is painted aluminum color to reflect the heat rays of the sun and keep the temperature down to atmospheric in the hot part of the summer. The liquid *Stargas* in the cylinder is always at its boiling point at all temperatures that are liable to be encountered at this latitude.

Pressure in the cylinder will be as follows:

Temp. ° F	*Cylinder Full* Lbs. per sq. in.	*Cylinder nearly empty* Lbs. per sq. in.
10° F	16	4
32° F	38	16
60° F	67	34
100° F	131	72

The *cylinder valve* (2) is a valve made of forged brass specially for this service. It has been found that an ordinary packed valve will leak after it has been used in this service for a short length of time. This cylinder valve has no packing but has a nickle silver diaphragm clamped between packing nuts in such a manner that it will move with the stem when raised and lowered a sufficient amount for service. This prevents any wearing of parts that will leak and eliminates any leaks through the packing around a valve stem. The outlet connection of this valve is built like a connection on an acetylene drum with a left hand thread of an odd size that a careless operator cannot ruin by screwing in standard pipe connections. The vent tube that extends down to the liquid is not connected to the passage in the valve through which the liquid enters and the gas leaves, but is connected by another passage to a vent plug. This tube is useful when loading cylinders. By venting occasionally it is easy to tell where the liquid is up to the tube. The cylinder is then weighed and the excess weight blown off through the vent tube.

A pigtail connection (3) made of ¼-inch O. D. copper tubing is used to connect the cylinder valve to the line valve (4). It has silver soldered joints and a ground joint union connection on both ends that will fit either the cylinder valve, line valve or the inlet connection on the regulator. These connections are made up with a wrench (10) that is chained to the gauge. This wrench is also used to open and close the cylinder valves as these valves have no hand wheels but only a ⅜-inch square stem.

The line valve (4) is of the same diaphragm type as the cylinder valve. It has the same inlet connection as the outlet connection of the cylinder valve and the pigtail connection can be connected to either valve through either end. On the outlet of this cylinder valve is a (⅜-inch pipe thread) male connection that screws into the side outlet connections of the ⅜-inch forged brass cross (5). The line valve acts as a cutoff valve when cylinders are being changed to give continuous service. As it has to work against full cylinder pressure at all times it is made as strong and durable as the cylinder valves.

The gauge (6) is a 300-lb. brass case pressure gauge for indicating the pressure in the cylinder that is being used. This gauge makes it easy to tell whether the cylinder is full or nearly empty.

The regulator (7) reduces the pressure of the gas from the cylinder (20 lbs. to 150 lbs.) to about 4 ounces. It maintains practically a constant pressure on the service line regardless of whether there is one burner or many being used and has a positive cut off that maintains the pressure within very narrow limits when several burners on the surface line are all cut suddenly off. It is provided with a cap over the adjusting screw that is fastened with a wire seal to prevent tampering.

This regulator is of special construction and of special materials for this work. The valve seats and diaphragms are made of special materials to withstand the solvent action of this gas, and the valve seats in particular are made of a material that will have a long life and give a positive cut-off under the action of the very small amount of gas being reduced from a high pressure to a very low pressure. The inlet connection of this regulator has the same thread as the outlet of the cylinder valve and the inlet of the line valve. This is so that should it become necessary to work on the line valves, cross or gauge, the pigtail connection may be connected straight from the cylinder to the regulator so as to give service while making the repairs. The outlet to service is ¾-inch pipe thread connection. This regulator is bolted to the back of the cabinet with four stove bolts and it supports all the fittings inside the cabinet.

Into the bottom of the regulator is connected the mercury seal filled with mercury to relieve at 1 pound pressure. This seal is also connected to the back of the cabinet by stove bolts.

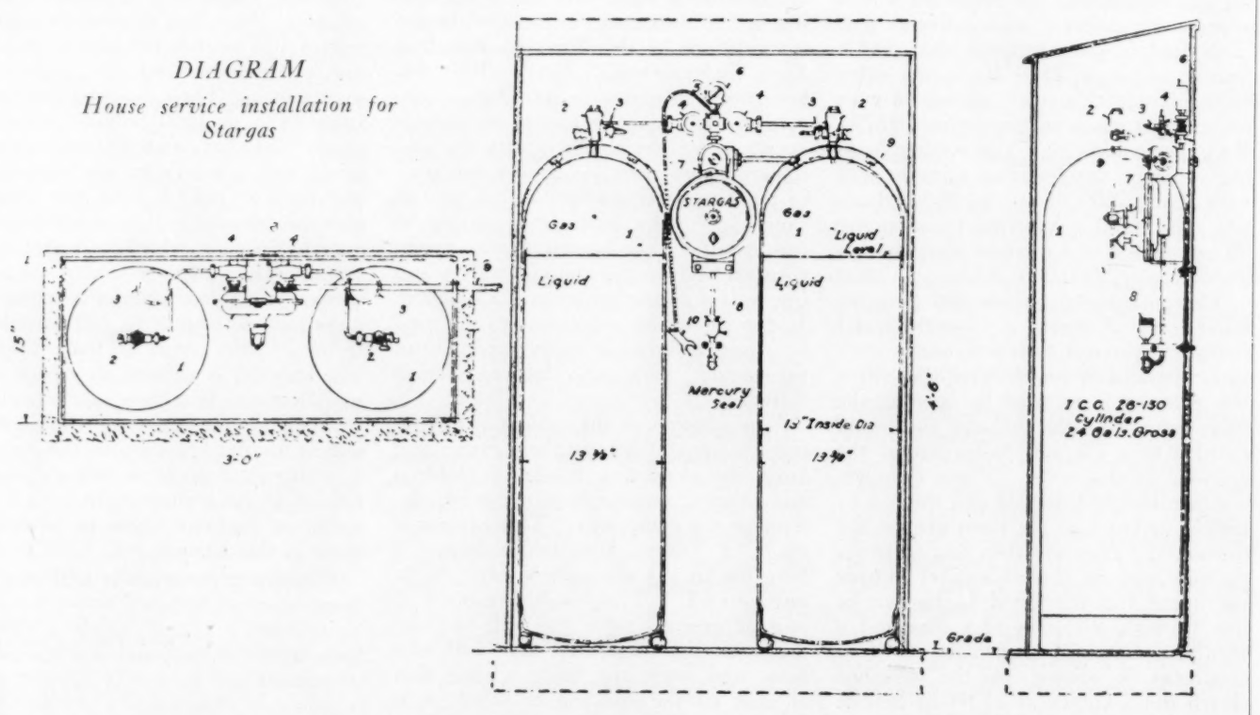
The service line (9) is ¾-inch pipe as it leaves the regulator but may be increased in sizes as desired.

When the apparatus is first installed both cylinders are full. One cylinder only is put into service by opening cylinder valve (2) and then line valve (4) which allows gas to pass from the top

(*Continued on Page 58*)

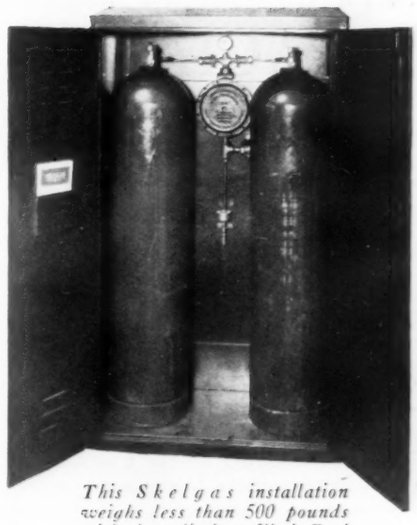
DIAGRAM

House service installation for Stargas



Skelgas Extends Outreach of Natural Gas Fuel

By GLEN CONDON
Skelly Oil Company
Tulsa, Oklahoma



This Skelgas installation weighs less than 500 pounds with the cylinders filled. Fuel capacity is 750 burner hours.

SKELGAS, as the name implies, is a Skelly gas product which has been developed to carry to those isolated from the conventional type of gas systems, the benefits and comforts afforded by the use of natural gas. The Complete standard *Skelgas* installation, exclusive of the gas burning appliances, weighs less than 500 lbs., with two full cylinders of gas, giving a total of 750 burner hours. The outstanding features of the project are its ease of installation and adaptation to present dwelling gas systems and appliances; its high heating value, approximately two and one-half times that of natural gas; and the fact that it can be used anywhere in cities, camps or clubs, farms, country estates, railroad dining cars, yachts, and, in fact, any place where man is found, as the installation is really a compact miniature gas plant. The gas burns with an odorless blue flame and is much superior to artificial city gas, as its heating value is approximately five times as great, which allows the use of a very small flame to produce the same amount of heat as proportional amounts of either natural or artificial gas, thus resulting in a smaller gas consumption. In addition to its use in domestic appliances, *Skelgas* can be used in any industry requiring a high grade gaseous fuel.

The standard installation consists of two seamless steel cylinders, steel cabinet, regulator, cabinet piping and automatic safety relief valve. The cylinders are of seamless steel construction tested to 600 lbs. pressure. The all-steel cabinet is 18 inches deep by 36 inches wide by 55 inches high, finished in dark green baked enamel, and houses all the equipment. The piping connections within the cabinet are heavily constructed and the entire unit built in accordance with the Underwriters' Laboratories recommendations and specifications. The house piping should be the same as that used for natural or artificial gas, and no special equipment is needed, as *Skelgas* is a natural gas and burns exactly like natural gas at natural gas system pressures, about 4 to 6 ounces.

Skelgas is a commercially pure hydrocarbon gas extracted from natural gas, because of its ideal features for use as a heating medium. It is extracted by means of special fractionating equipment installed at our natural gasoline plants, and it is then treated to remove any traces of undesirable impurities, after which it is charged into the steel cylinders for shipment. The cylinders are constructed to conform to the Bureau of Explosives' regulations and at present are shipped in carload quantities to the various distributing centers. Special care is exercised in the manufacture and handling of the product in order not to impair the ideal heating value which the pure concentrated product possesses.

To set up a *Skelgas* installation requires no special tools, or the service of any specialized help. The pieces of equipment are individually packed and shipped as a unit and only a screwdriver, pliers, and a pipe wrench are required to set up the installation. The cabinet should be mounted on a solid foundation which is usually located against one of the outside walls of the building in which the gas is to be used. Once installed the equipment requires no attention other than to remove one of the cylinders when it has become exhausted, and install a fresh cylinder. This operation requires only about three minutes, as there is only one connection to disconnect and reconnect and a wrench for this purpose is permanently attached to the equipment.

Skelgas is used in any gas burning appliance. Minor mechanical alterations are made at the factory in order that the greatest economy and satisfaction may be obtained from a high-heating value gas as is *Skelgas*. The operation and appearance of *Skelgas* appliances is precisely the same as appliances used with ordinary natural or artificial gas.

As the *Skelgas* installation contains two cylinders, each with a capacity of 375 burner hours, it is not necessary to provide additional supply other than the two cylinders in the cabinet, as when one cylinder is consumed the other cylinder is turned on without interrupting the gas flow. The consumer then has ample time to order and install a new cylinder of gas before the second original cylinder is exhausted, thus a constant maximum supply is maintained at all times.

The installation is very simple and compact, the only actual working part being the regulator which controls the flow of gas into the house line and which is entirely automatic, requiring no adjustments when once set. When the gas is turned on at the appliance the regulator opens and admits gas to the line as fast as it is consumed, and when the gas is shut off at the appliance the regulator shuts off instantly, until gas is again needed. Thus as in the case of the conventional city gas, the gas is always available the moment the appliance is turned on.

Skelly Oil Company has organized for merchandising this new product. The marketing is being done through the Skelgas Division of the Skelly Oil Company, El Dorado, Kansas, with G. A. R. Slocum directly in charge. Warehouse distributing points have been established at Kansas City, Omaha, Des Moines, Minneapolis and Tulsa. At the present time the gas is bottled at the natural gasoline plants of the company in Oklahoma and Texas and shipped to the distributing points in the cylinders. Ultimately it is planned to distribute the product in specially constructed tank cars and have the bottling done at the various warehouses.

RETAIL SALES METHOD

The marketing territory has been opened by sending crews of experienced demonstrators and salesmen into the various sections of the country where a survey showed the greatest potentialities. The product is being handled exclusively

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PACIFIC COAST GAS ASSOCIATION

447 Sutter Street, San Francisco, California

A Department Conducted by Clifford Johnstone, Executive Secretary

Section Organization Shaping *for* Year's Work

UNDER the leadership of the men who served as Section Vice-Chairmen during the past year, the committee organization of the Association is being perfected with greater speed than has been customary in the past. Every effort is being made to organize the section work on a permanent basis so as to avoid as much as possible the lost motion and delay which comes with each change of administration.

Each Section Chairman has already appointed an Executive Committee which will be permanent from year to year, as in each case it is composed of the senior officials of Class A and Class B members in the branch which the section represents. Appointments to committees will be largely in the hands of Executive Committee members as will also the determination of what subjects will be assigned to committees.

The endeavor of the Section Chairmen will be to actively study all subjects which are of interest to Association members, and through the Executive Committee to assign these subjects to men capable and willing to handle them. Association members having ideas or suggestions to make concerning the Association committee work in any branch, or desiring to work on committees, should notify either the Executive Committee member in their own organization, the Section Chairman, or the Secretary.

It is hoped by this method that the Association can build up a capable and efficient organization for the study and discussion of problems common to all gas companies.

The names of Executive Committee members will be published on the Aassociation's page in the December issue of *Western Gas*.

Section officers are as follows:

Accounting Section:

B. H. Parkinson, General Chairman, Portland Gas and Coke Company, Portland, Oregon.

D. G. Martin, Vice Chairman, Pacific Gas and Electric Company, San Francisco, California.

Commercial Section:

Clyde H. Potter, General Chairman, Southern Counties Gas Company. Los Angeles, California.

H. R. Basford, Vice-Chairman Central District, President H. R. Basford tric Company, San Francisco, California.

J. Earle Jones, Vice-Chairman Northern District, Portland Gas and Coke Company, Portland, Oregon.

Public Relations Section:

A. E. Holloway, General Chairman, San Diego Consolidated Gas and Electric Company, San Diego, California.

E. G. McCann, Vice-Chairman Central District, Pacific Gas and Electric Company, San Francisco, California.

Geo. L. Myers, Vice-Chairman, Northern District, Pacific Power and Light Company, Portland, Oregon.

Technical Section:

Van E. Britton, General Chairman, Pacific Gas and Electric Company, Oakland, California.

B. G. Williams, Vice-Chairman Southern District, Southern California Gas Company, Los Angeles, California.

John Keillor, Vice-Chairman Northern District, British Columbia Electric Power and Gas Company, Vancouver, B. C.

Clyde H. Potter, Chairman of the Commercial Section, held his initial organization meeting of the section in Los Angeles on October 29th, and plans for the year will be available for publication next month.

A. E Holloway, Chairman of the Public Relations Section, will hold the initial meeting of his Executive Committee in San Francisco about the first of December, and Van E. Britton, Chairman of the Technical Section, is planning his first meeting of the year in San Francisco on November 22nd and 23rd.

Mr. Britton has divided the work of the Technical Section into three major groups covering Production, Distribution and Natural Gas. The Production Committee will be headed by J. E. Kelley of the Pacific Gas and Electric Company, San Francisco. Mr. Kelley has already decided that the following 1928 committee's will be continued intact:

Committe on Water Gas, J. J. Ferrari, chairman, Puget Sound Power & Light Company, Bellingham, Washington.

Committee on Oil Gas Specifications, F. C. Jones, chairman, Pacific Gas and Electric Company, San Francisco.

Committee on Chemical Procedure, Duncan Stewart, chairman, Pacific Gas and Electric Company, San Jose.

The Distribution Committee will be under the leadership of W. M. Henderson of the Los Angeles Gas and Electric Corporation, Los Angeles. While Mr. Henderson's organization has not been fully completed at this writing, he announces that he will continue the Committee on Soil Corrision under the Chairmanship of Dozier Finley, research engineer of the Paraffine Companies, Inc., Emeryville, California. The work on Load Factors, which has proved so interesting and valuable during the past three years, will also be continued. Mr. Henderson has headed this committee himself in the past. and a new chairman has not yet been selected.

The Natural Gas Committee will undoubtedly become one of the most important units in the Technical Section organization. It is to be headed this year by Wm. Moeller, Jr, manager natural gas production and transmission, Southern California Gas Company. Mr. Moeller plans to continue the committee on Natural Gas Measurements headed by F. A. Hough of the Southern Counties Gas Company.

In addition to the Section organization, President C. H. Dickey has reappointed M. B. Beckett, rate engineer of the Pacific Gas & Electric Company, as chairman of the general committee on Rate Structure.

Association Calendar

Commercial Section Meeting—San Francisco, November 22-23.

Technical Section Quarterly Meeting—San Francisco, November 22-23.

Commercial Section Northwest Meeting (within 60 days)—date to be announced.

Public Relations Section Quarterly Meeting (within 60 days)—date to be announced.

Annual Convention—Del Monte, week of September 11, 1929.

P.C.G.A. Well Represented at A.G.A. Convention

MEMBERS of the Pacific Coast Gas Association in attendance at the 10th Annual Convention of the American Gas Association at Atlantic City, October 8 to 12, were as follows:

President Chas. H. Dickey.

Executive Secretary Clifford Johnstone.

W. M. Thompson, director of the Association and president of the Reliance Manufacturing Co., Alhambra.

M. R. Thompson, vice-president of the Southern Counties Gas Company, Los Angeles.

Addison B. Day, president of the Los Angeles Gas and Electric Corporation, Los Angeles.

Frank Weiss, manager of new business, Los Angeles Gas and Electric Corporation, Los Angeles.

F. F. Doyle, Lee Holtz, M. Levering and E. M. De Remer, all of the Southern California Gas Company, Los Angeles.

W. M. Kapus, president of the Northwest Gas & Electric Equipment Company, Portland, Oregon.

Jay Jenkins, publisher of *Western Gas*.

Ray W. Campbell of the Payne Furnace & Supply Company, Los Angeles.

Walter M. Berry, consulting engineer, Los Angeles.

W. D. Dickey and K. C. Tomlinson, both of the Pacific Meter Works, San Francisco.

In behalf of the Pacific Coast Gas Association, President Dickey extended an invitation to the American Gas Association to hold a meeting of its Advisory Council and Executive Board on the Pacific Coast some time during this winter. The invitation is being seriously considered by the leaders of the American Gas Association and if accepted, this important gathering will probably take place in Los Angeles early in February.

Discontinue Advertising in Proceedings

By action of the Board of Directors the Secretary has been instructed to discontinue the sale of advertising in the Annual Proceedings, as a measure of cooperation with the Association's official publication, *Western Gas*.

METALS MEETINGS TO BE HELD

The first Western Metal Congress, the Western States Metal and Machinery Exposition, and the semi-annual meeting of the American Society for Steel Treating, will be held jointly, January 14 to 18, 1929, in the Shrine Auditorium at Los Angeles, California.

Commercial Men Hold First *of* Sectional Quarterly Conferences

ON October 29 the Commercial Section held the first of its quarterly conferences, meeting at 2:30 p. m. on the ninth floor of the Los Angeles Gas and Electric Corporation Building, Los Angeles, Calif., with Clyde H. Potter, general chairman of the Section, presiding.

Among the items of business transacted was the appointment of a committee to study possibilities in cooperative advertising, with special reference to making a beginning in this direction in the Los Angeles metropolitan area and later extending the effort to take in other sections of the Pacific Coast. Frank Weiss of the Los Angeles Gas and Electric Corporation was named to head this committee, with J. C. Gilbert, Southern Counties Gas Company, C. M. Grow, Southern California Gas Company, and Guy Kendall, Northwest Gas and Electric Equipment Company, comprising the other committee members. All types of advertising, including newspaper, radio, etc., will be investigated, looking to the possibility of a cooperative effort.

Dates for the 1929 convention were announced as the week of September 11, Del Monte, Calif., being the site.

A two day session of the Commercial Section will take place in San Francisco, November 22-23.

As a result of the Los Angeles meeting the Commercial Section announces the following committee line-up for the year's work, the committee personnel to be completely organized before the San Francisco November meeting convenes:

Domestic sales committee, industrial sales committee, advertising committee, architects and builders cooperation committee, advisory rate committee, ordinance committee, sales budgets committee, appliance research committee.

Those attending the Los Angeles commercial meeting were:

Frank Weiss, C. M. Grow, N. R. McKee, J. P. Davidson, E. S. Hoyt, J. W. Anderson, A. J. Hartfield, E. L. Payne, J. Brombacher, J. M. Williams, J. C. Blair, J. Graham Hambley, H. B. Mayer, A. L. Spring, Guy R. Kendall, J. C. Gilbert, Clifford Johnstone, Capt. A. E. Higgins, D. L. Leahy, Morris F. Wales, Jay Jenkins, Daniel K. Coyle, Dewitt Clark, W. H. Hoyt, Walter Therber, Clyde H. Potter, Ross Monroe, J. E. Deggendorf.

105 P. G. *and* C. Employees *in* Speaking Contest

ALTHOUGH the 1928 convention of the Pacific Coast Gas Association is now past history, *Western Gas* feels that attention should be called to the manner in which one company cashed in on a pre-convention activity—the three minute speaking contest preliminaries.

As noted in our October issue, 105 employees of the Portland Gas and Coke Company registered for the company elimination contest, to determine who should represent the company at Coronado. A trip to the convention with all expenses paid was the grand prize, and $25 was the second prize. Elimination contests of 10 groups established on departmental lines were held on four consecutive evenings. The winners of the group contests then participated in the finals, and the scoring was very close. First prize went to Virginia Ringler of the bookkeeping department, and second to R. L. Wann of the office force at the gas works. John A. Laing, vice-president of the company, surprised the eight disappointed contestants who had failed to win a major prize with the gift in behalf of the company of a new ten-dollar bill.

According to officers of the company and judges at the contests all of the manuscripts were splendidly prepared. Each contestant presented the subject "Gas the Aristocrat of Fuels," and every department in the company was well represented.

The contest was under the direction of E. L. Hall, W. H. Barton, John H. Hartog, M. J. Wilkinson, U. O. Rogers and S. E. Skelley.

P. G. AND E. IN 6 WEEKS DRIVE ON RANGE SALES

The North Bay Division of the Pacific Gas and Electric Company has for over a month been staging an intensive range sales campaign, which is scheduled to last 6 weeks in all. Five men are out with a quota of 160 ranges, and at the end of the first five weeks the quota had been exceeded. The average sale is a little over $135. It is interesting to note that V. R. Schneider, winner of the water heater campaign, and a "green" salesman prior to that time, is high man in this newest promotional activity. At the end of the fourth week he had already exceeded his quota by some 20 per cent.

A. G. A. CENTRAL HEATING MEETING IN DENVER

The American Gas Association has called a meeting of its central heating plant requirements committee in Denver, Colorado, on December 11, to consider revision of furnace and boiler requirements. Pacific coast members of the committee include F. M. Banks, Elroy Payne, C. B. Babcock and E. L. Hall.

EDITORIAL

Another Step Toward Cooperative Advertising

COOPERATIVE advertising has demonstrated its effectiveness in many fields and has had its advocates in the gas industry for years, but only recently has the growing sentiment for its use begun to crystallize into action. Experiments in this direction, begun in New England, have been watched closely by the industry generally. Now it appears that another section of the country, at a geographic extreme from New England, is definitely scanning the cooperative advertising field. The Commercial Section of the Pacific Coast Gas Association at its organization meeting last month named a committee to look into cooperative advertising possibilities, with reference primarily at the present to working out a program for gas companies and gas appliance interests operating in the Los Angeles metropolitan area. If such a program is definitely launched its success would doubtless lead to a Coast-wide effort along the same lines.

It should not be difficult to settle upon some one or two forms of advertising from which all interests would benefit. The next step is to secure the support of gas companies, manufacturers, and others involved, then place the program in specialized hands for detailed development and carrying through. Gas companies of the Los Angeles metropolitan area have conducted cooperative exhibits and together have promoted model home enterprises. The field should be a fruitful one for cooperative advertising pioneering. Pacific Coast companies will watch the work of the cooperative advertising committee expectantly.

Optimism from Figures

CONVENTION time is a time for stock-taking, totalling results and analysing failures. Taking stock at the American Gas Association convention, it was evident that there is good cause for optimism in the gas industry. Statistics for the last available annual period, 1927, are decidedly sanguine. In a year when general industry slackened its pace the gas industry forged ahead with a new high record for sales, increasing eight per cent over the year preceding, registering another measurable increase in revenue from sales, and adding 700,000 new consumers of its services. The customers of the industry now total 15,434,000, which represents an estimated 73,000,000 persons.

At a time when it is habit to point to our many sided competition—competition of rival fuels, competition of an unlimited range of modern luxuries and necessities which can eat into "the consumer's dollar" and prevent gas from getting its due share—it is well to refresh ourselves with the fact that in the face of all obstacles we are growing. The events of 1928 will make another impressive record of growth. By dint of sales effort and manufacturing economies the industry is a good deal more than holding its own in this modern day.

Practical Sales Effort

IN a gas company employee journal of recent issue a commercial manager turns to a side of the sales experience which too often is hidden from sight, when he relates an incident which resulted in the loss of an attractive piece of domestic business. A searching analysis of why sales are lost can do as much toward bringing the perfect sales technique nearer as can an analysis of sales that are completed.

In the case in reference the reason for the failure was close at hand. The prospect was not content with watching an appliance operate on the sales floor and wished to see one at work in a practical home. He suggested calling at the home of one of the gas company officials, thinking naturally enough, that the latest in gas appliances would be in use there if anywhere. On learning that the official had not equipped his home with the appliance in question the prospect decided to look farther, in the hope of buying from someone who had sufficient faith in his wares to use them.

Possibly many sales fail to close for this same reason. Certainly many more sales contacts would result if company employees clear down the line were encouraged to outfit with the latest in domestic gas equipment. Ordinary social contacts with such homes would be the best imaginable kind of gas advertising.

Companies which are not offering inducements to their employees to purchase domestic appliances are overlooking a bet. Preferential prices and payment terms are strongly justified on the score of advertising alone.

Cleanliness: A Multiplier *of* Sales *for* Gas-Heated Hot Water

By CHARLES A. MEYER
*President, Los Angeles Soap Company**

SOAP and hot water are used for just one object—cleanliness. Gas companies interested to see more gas heaters sold for hot water heating will doubtless be interested in the new cleanliness advertising and educational movement undertaken on a national scale by the soap manufacturers of America through their trade association, for the very simple reason that better standards of cleanliness will not alone increase the sales of soap but will likewise multiply the sales of hot water heated by gas.

The makers of 80 per cent of the soap made in America have recently united themselves through a trade association in a cooperative advertising, publicity and educational effort to raise cleanliness standards. They have established not only their own Association but also a separate body known as Cleanliness Institute, with headquarters in New York. Cleanliness Institute is a high grade national educational organization, non-commercial in character, based on public service in the cleanliness field, and working in close cooperation with schools, health departments, and other public service departments and organizations.

In these related efforts the soap industry will expend this year and next more than one and a quarter millions of dollars. All this is through the new Association and the Institute. Not one penny is used to further the interest of any one company or brand or kind of soap. The movement is on behalf of the whole industry and is in the service of the public. The movement is of direct importance, we believe, to the expansion of the hot-water heating business of gas companies in all parts of the United States.

In this brief paper, we wish to present three phases of this work: (1) The general basis upon which we are operating—that is, the fundamental philosophy of the movement; (2) the various concrete steps in our program; and (3) some points at which possibly your industry and ours may work together to mutual advantage.

First, our underlying philosophy. You have gas to sell; we have soap. Once upon a time, perhaps, all that was necessary was to offer our products, and the public bought. But times change. Today, every industry meets stiff competition. There are so many demands for the consumer's dollar that he may even neglect what we used to think of as fundamental necessities. Today, real salesmanship is necessary to sell even such basic products as gas and soap.

How, then, do producers sell? Take illustrations with which we are all familiar. Pacific Coast orange growers had oranges to sell. To them they attached a romantic name, Sunkist, and advertised the abounding health that would come from oranges filled with juice drawn from your rich soils and sunny skies. Everybody wants health—so everybody buys Sunkist oranges.

Take yeast. Does a phrase like "buy my yeast" sell this product? No! Again it is the ruddy cheek, the sparkling eye, the vitamic abounding health and beauty and joy that sells yeast.

Take gasoline. It's the lure of the out-of-doors; it's the free map and road services; it's the joy of camping, and seeing distant scenery, that makes people travel thousands of miles, and incidentally consume lots of gas in this pleasant process. So this is what the gasoline companies advertise—and they thrive.

Good lighting is what people want when they buy electric light bulbs. The joy of music in the home is what is emphasized by radio manufacturers rather than the price of their product. The prospective customer comes to feel he cannot possibly do without the advantages of the radio—and almost regardless of cost radios are bought by the millions.

So the fundamental thought with us that if people can be led to want cleanliness keenly enough, they will buy all the soap and all the towels and all the plumbing fixtures and all the gas that is necessary—and that, furthermore, the question of the price of these articles

(*Continued on Page 50*)

*Presented before the Commercial Section of the Pacific Coast Gas Association, Coronado, Calif., September, 1928

speaking of good form

FINGER bowls after meals, if you like. But, anyhow, thorough hand washing before meals. Good form demands it.

Don't let lack of hot water hold you back on the big little things of life. Install an automatic gas water heater. Enjoy that warm bath, that easy shave, that effortless dishwashing.

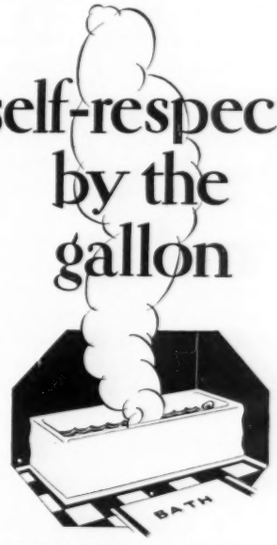
All the sizzling hot water you want! On the instant. Turn your faucet. The heater does the rest. Simple, isn't it?

The automatic gas water heater—most economical to run—easy to pay for. Ask us.

[Your company name goes here]

Prepared through courtesy of Cleanliness Institute for the American Gas Association

self-respect by the gallon



STEP high! Up the ladder of success! There's self-respect in cleanliness. There's self-assurance in soap and hot water.

Get your hot water the easy way. Put in an automatic gas water heater and watch wonders commence. Bathe! Shave! Wash! There's hot water enough for everyone, and it's on tap all the time.

Install an automatic gas water heater — and enjoy life

[Your company name goes here]

Prepared through courtesy of Cleanliness Institute for the American Gas Association

Conservation *of* Natural Gas *in* California

By EDWIN HIGGINS
Managing Director, Chamber of Mines and Oil

SINCE the appointment in October, 1927, by Governor C. C. Young of California of the Governor's Gas Conservation Board, and the subsequent cooperative program of gas conservation entered into by oil and gas operators of California, much interest has centered upon the progress of the important task in hand. At the Coronado convention of the Pacific Coast Gas Associations Edwin Higgins, managing director of the Chamber of Mines and Oil, Los Angeles, outlined the course of events in the gas conservation program for the delegates present. The Chamber of Mines and Oil has served as a clearing house for conducting the work, following the appointment of the operators General Committee through which representation was secured for the principal interests affected.

Beginning with his description of the work of the field committees which gathered data on gas production, consumption, surplus, etc., we quote excerpts from Mr. Higgins' address, in which he points to this gas conservation enterprise as an outstanding instance of benefits resultant from cooperation between state and industry.

IT was decided to appoint field committees throughout the State to gather accurate data as to the amount of gas produced, the amount of gas consumed, the amount of surplus gas and its location, this information to be assembled in a report to the General Committee, with recommendations as to the utilization of such surplus as might be found to exist. Accordingly, the following committees were appointed: Los Angeles Basin District Committee, under the chairmanship of Martin Van Couvering, petroleum engineer; Ventura District Committee, under the chairmanship of Ben E. Parsons, General Petroleum Corporation; Kern County Committee, under the chairmanship of J. H. Menke, Standard Oil Company of California; and a Distribution and Marketing Committee, with Wm. Moeller, Jr., of the Southern California Gas Company, as Chairman.

SHUT IN PROPOSED

Within a few days these subcommittees had been organized and had proceeded to investigate, not only the gas production situation, but the facilities for transporting excess gas from points of production to other areas where it might be utilized or stored. At a meeting of the Operators' General Committee on February 17, the information was brought out that, during the five or six months of low seasonal demand, the gas surplus would reach 160 million cubic feet per day. It appeared that 60 million cubic feet of this surplus could be eliminated by shut-in arrangements between the various companies concerned. The committee approved a plan embracing the shutting in of production in Ventura County and at Seal Beach. It further recommended the study and application of gas storage as a secondary stage of the conservation program.

At the meeting of the Operators' General Committee of March 14 and 15, the field committees presented, as a result of their investigations, a mass of data dealing with conditions in the various producing districts of the State. A digest of this information constituted the first complete picture of the gas production and utilization situation in California that had ever been made available.

After careful consideration of the facts in hand, the Operators' General Committee, at a meeting held April 10, instructed the field committees to prepare reports for each district embracing the following detail:

1. Map of the area showing probable limits of the sand in which gas can be stored, ownership and leasehold interest in each parcel, and existing wells. (Statement as to zone and thickness thereof.)

2. Maps and compilations showing the present gas pipe lines and compressor plants in each area.

3. Estimates of compressor installations and new pipe lines necessary to inject the required amount of gas into the structure.

4. Wells selected for such injection.

5. Estimates of new trunk line necessary to take the required gas into the field.

6. Estimated costs for improvements necessary within the field and, separately, to bring gas to the field.

7. Estimated costs of injecting the gas—that is, estimated operating cost per thousand; divided into "out-of-pocket" costs and other costs, such as interest on new investment (as above), depreciation, etc.

By the middle of April, gas injection programs in the Dominguez, Brea Canyon, South Mountain and West Coyote fields, looking to the ultimate injection of approximately 40,000,000 cubic feet of gas per day, were under way, and the General Committee was giving attention to other projects that appeared to warrant consideration. In the meantime, the shut-in policy in the Ventura field had resulted in the pinching in of 40 million cubic feet of gas daily.

Early in May it became evident that repressuring and gas injection were beginning to assume a position of first importance in the conservation program. The Operators' General Committee decided on a reorganization of the committees dividing the work into two parts, viz., (1) Reduction of gas production by manipulation of flowing wells and restriction of drilling; and (2) Caring for surplus gas by transportation, injection, and storage. The field committees (covering Ventura and Kern counties and the Los Angeles Basin) were directed to continue work on the first mentioned activities, and the repressuring work was placed in the hands of a newly organized committee made up of engineers who were at work on the injection projects then in hand. The direction of the first group was delegated to Reed D. Bush, State Supervisor of Oil and Gas. A. C. Rubel, of the Union Oil Company of California, was made Chairman of the Storage and Repressuring Committee. This latter committee also took over the functions formerly filled by the Distribution and Marketing Committee. The newly appointed committees have held monthly meetings and have made regular reports of progress to the Operators' General Committee.

SUMMARY AT END OF AUGUST

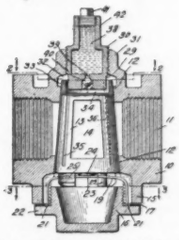
The accomplishments up to the end of August, 1928, are reflected in the following summary: At that time, as a result of the shut-in plan, there was approximately 135 million cubic feet of gas held in the ground daily in the various fields of the State. Injection and repressuring projects were accounting for over 54 million cubic feet, distributed as follows: Dominguez, 20,155,000 cubic feet; West Coyote, 7,000,000; Montebello, 10,000,000; Brea, 4,350,000 Santa Fe Springs, 800,000; Seal Beach 800,000; Ventura county, 1,000,000; Santa Barbara county, 500,000; and San Joaquin Valley fields 10,000,000 cubic feet.

Thus, with the conserving of 190 million cubic feet of gas daily, it may

(*Continued on Page 49*)

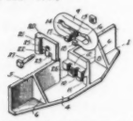
THIS MONTH'S PATENTS PERTAINING TO THE INDUSTRY

1,668,168. VALVE. Sven Johan Nordstrom, San Francisco, Calif., assignor to Merco Nordstrom Valve Company, San Francisco, Calif., a Corporation of Delaware. Filed Apr. 14, 1926. Serial No. 101,864. 9 Claims. (Cl. 251—93.)



1. A valve comprising, a casing having a passageway therethrough and a tapered valve seat formed transversely of the passageway, a tapered plug seated in the valve seat and having a hole adapted to register with the passageway, resilient means associated with the larger end of the plug for holding the plug against its seat, and a hollow lubricant containing head screwed into the casing beyond the smaller end of the plug, the smaller end of the plug and the inner end of the head being provided with cooperating means whereby when the head is turned the plug is rotated in its seat, and a space between the head and the plug for containing lubricant.

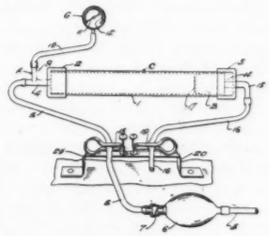
1,681,429. CONVEYER FLIGHT. Redmond H. Pangborn, Tacoma, Wash. Filed Apr. 28, 1924. Serial No. 709,420. 7 Claims. (Cl. 198—176.)



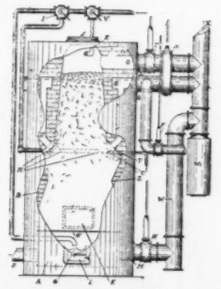
2. The combination with a conveyer chain of a link in said chain having a side opening whereby it may be detached and having lugs thereon and a conveyer flight provided with openings adapted to receive the said lugs to provide a rigid connection between the link and flight

1,671,795. GAS-TESTING DEVICE. Royal E. Tebbens, Paterson, N. J. Filed Aug. 27, 1925. Serial No. 52,878. 2 Claims. (Cl. 23—254.)

1. A testing device of the class described, comprising a tubular member, removable caps at each end of said tubular member, a flexible conduit having connection with one of said caps for delivering within said tubular member at one end thereof, said conduit leading from a source of supply, an aspirator coacting with said conduit, a vacuum gauge in communication with said conduit adjacent the cap, a second flexible conduit connected with the other cap and having communication with the tubular member at the opposite end thereof, an absorbent of a dry character within said tubular member at one end thereof, means engageable with each of the flexible conduits normally compressing the same to close flow therethrough, the means normally compressing one of the conduits being positioned immediately adjacent to the means for closing the second conduit to permit both of the means to release the conduits upon operation by a single digit of the hand.

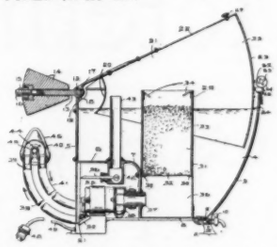


1,683,153. GAS GENERATOR. Claude Winfield Botsford, Chicago, Ill., assignor to William W Odell, Pittsburgh, Pa. Filed Dec. 26, 1919. Serial No. 347,566. 6 Claims. (Cl. 48—78.)



A combined water gas generator and gas producer comprising a substantially upright, lined shell for retaining a bed of ignited solid fuel, said shell having an annular recess in said lining intermediate the ends of said shell and contacting said fuel, said shell being provided with separate and independent passages for admitting steam and an air blast directly to the fuel bed at said annular recess at points adjacent the top and bottom of said shell for the discharge of gas and valves for controlling said discharge outlets

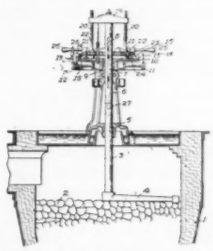
1,677,147. GAS MEASURING. Elmer J McKesson, Toledo, Ohio. Filed Oct. 10, 1921. Serial No. 506,584. 8 Claims. (Cl. 128—191.)



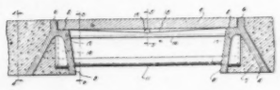
1. Respiration mechanism comprising an inhaler, duct sections to and from the inhaler, a gasometer connecting the ends of the duct sections remote from the inhaler, said gasometer including a liquid reservoir, a float providing a chamber above the liquid level in the reservoir into which chamber above the liquid level the ends of the duct sections project, a fulcrum mounting for the chamber permitting movement thereof as to the reservoir, and chamber operation disclosing means movable on a common axis with said fulcrum.

1,676,148. GAS PRODUCER. Charles W. Lummis, Worcester, Mass., assignor to Morgan Construction Company, Worcester, Mass., a Corporation of Massachusetts. Filed June 27, 1919. Serial No. 307,136. 2 Claims. (Cl. 48—85.2.)

1. In a gas producer, an agitating member for the fuel bed in said producer, continuously rotating actuating means adapted normally to impart rotation to said agitating member at a predetermined fuel level in the producer, means for rendering said actuating means wholly inoperative for the rotation of said agitating member in the event of undue resistance to said rotation at said predetermined fuel level, means for applying the rotation of said actuating means to the elevation of said agitating member while said undue resistance prevails, and means periodically operative during the elevation of said agitating member for applying pressure against said resistance through the continued rotation of said actuating means.

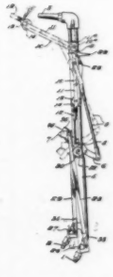


1,680,280. TRENCH COVER AND FRAME. Edward W N Boomer, Detroit, Mich. Filed June 26, 1925. Serial No. 39,795. 3 Claims. (Cl. 72—0.5.)



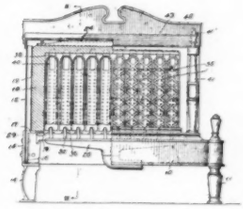
1. In trench construction, frame members each adapted to form a side of the trench and to be embedded in concrete each frame having an inner closed flange and an outer notched flange at an angle one to the other, the frames having the upper edges thereof practically flush with the concrete surface and formed with a longitudinal shoulder, the said inner closed flanges each having a series of recesses extending to adjacent the bottom of the flanges and opening through the outer face thereof, a series of hanger bars in the recesses extending transversely of the trench and providing spacers, and bolts extending between the frame members adjacent the upper edge tying the parts together

1,685,633. AUTOMATIC TORCH LIGHTER. Frederick J Heybach, Savannah, Ga. Filed Oct. 15, 1926. Serial No. 141,823. 8 Claims. (Cl. 158—27.4.)



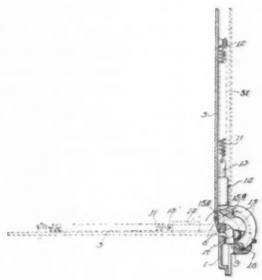
1. In a metal working torch, a flame nozzle, a lighter adjacent said nozzle, means for operating said lighter to move it to or from said nozzle, two pipes conveying, respectively, an inflammable and a non-inflammable gas to said nozzle, valves in said pipes, manually actuable controlling means for said valves, the valve controlling the non-inflammable gas being responsive to control by said lighter operating means when open for closing said valve before igniting the inflammable gas at said torch.

1,683,082. HEATER. Lindley S. Lawson, Pittsburgh, Pa., assignor to Lawson Manufacturing Company, Pittsburgh, Pa., a Corporation of Pennsylvania. Filed Oct. 10, 1924. Serial No. 742,821. 23 Claims. (Cl. 126—92.)



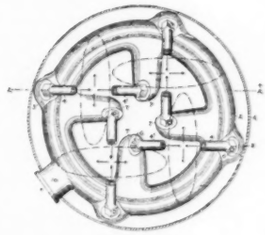
1. The combination in a gas heater of a fire back, a burner located in front of said fire back, radiants supported in operative relation to said burner and means for supporting said fire back and said burner located at each end thereof.

1,684,808. OVEN DOOR. Walter F. Rogers, Chicago, Ill. Filed July 6, 1927. Serial No. 201,835. 4 Claims. (Cl. 126—191.)



1. In an oven door and frame therefor, means to provide for the opening and closing movement of said door and spring tensioned means resisting the opening of said door comprising a spring secured at one of its ends to the door and at its other end to an arcuate link, said link being connected to said door-frame.

1,677,787 GAS BURNER. Harry E. Kerr, Cleveland, Ohio, assignor to The Cleveland Gas Burner and Appliance Company, Cleveland, Ohio, a Corporation of Ohio. Filed Sept. 30, 1925. Serial No. 59,497. 1 Claim. (Cl. 158—104.)

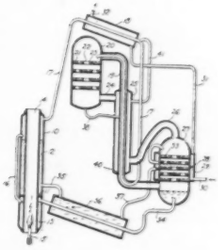


A gas burner, comprising a circular gas distributing manifold having gas and air commingling tubes extending inwardly from its circumference and companion gas and air commingling tubes extending outwardly from its center portion, said tubes forming pairs of cooperating gas and air commingling tubes, the axes of each pair of said tubes lying in a single plane tangential to a small circle centrally of the manifold.

1,684,658. METHOD OF AND APPARATUS FOR FORMING ARTICLES. Robert Beardsley, Chicago, Ill. Filed Nov. 30, 1923. Serial No. 677,719. 2 Claims. (Cl. 193—1.)

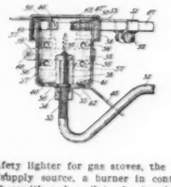
1. In apparatus for forming articles from parchmentized material, paper and the like, a mold comprising an inner member around which a sheet of such material may be wound, said inner member having a depression in its top, a tubular shell adapted to surround said inner member and adapted to seat on said sheet, a plug removably fitting into said depression to clamp a portion of the sheet between itself and the surrounding wall of said depression, and means for heating said inner member

1,674,530. REFRIGERATION. Alvar Lenning, Stockholm, Sweden, assignor to Electrolux Servel Corporation, New York, N. Y., a Corporation of Delaware. Filed Mar. 20, 1928, Serial No. 263,204, and in Germany July 21, 1927. 10 Claims. (Cl. 62—178.)



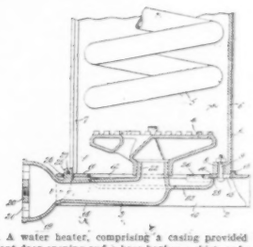
1. Refrigerating apparatus of the absorption type comprising an absorber, means to circulate absorption liquid through said absorber, an evaporator situated above said absorber, means to introduce liquid refrigerant into the upper part of said evaporator, a conduit connecting the lower part of the absorber with the upper part of the evaporator, a conduit connecting the upper part of the absorber with the lower part of the evaporator and a conduit connecting the evaporator with the first mentioned conduit for carrying liquid refrigerant therefrom the evaporator.

1,664,918. SAFETY GAS-STOVE IGNITER. William F Diehtr, Newark, N. J., assignor to U. S. Tool Co., Inc., East Orange, N. J., a Corporation of New Jersey. Filed Dec. 19, 1925. Serial No. 76,411. 3 Claims. (Cl. 158—115.)



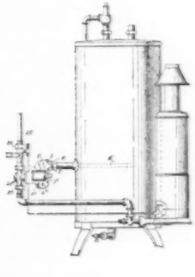
1. In a safety lighter for gas stoves, the combination with a gas supply source, a burner in controlled communication therewith and a pilot, of a housing completely enclosing said pilot, tubular connections between said pilot and one of the openings in said burner, a valve controlled pipe between said gas source and said pilot, and means for adjusting the height of said pilot and housing relative to said burner.

1,685,857. WATER HEATER. Clarence H. Morrow, Cleveland, Ohio, assignor to The Hotstream Heater Company, Cleveland, Ohio, a Corporation of Ohio. Filed Sept. 27, 1924. Serial No. 740,227. 11 Claims. (Cl. 126—350.)



1. A water heater, comprising a casing provided with a front door opening and a base having a skirt, and a side feed burner mixer having a horizontally extending portion extending through the skirt, said base being formed to receive said mixer in a plurality of different positions.

1,683,172. THERMOSTATIC VALVE. Loran F. Dorn, Cleveland, Ohio, assignor to The Cleveland Heater Company, Cleveland, Ohio, a Corporation of Ohio. Filed Jan. 27, 1925. Serial No. 4,995. 6 Claims. (Cl. 236—48.)



3. In a device of the character described, a fuel supply valve, a thermostatic regulator, reversely arranged overlapping compound levers operatively connected to said thermostatic regulator, a yoke operatively connected to said levers, pivotally mounted spring resisted levers carried thereby, toggle acting arms in operative engagement at their inner ends with the valve and interposed between the spring resisted levers and the valve to form a toggle acting connection between the valve and the levers.

With *the* Metermen

Long Beach Session *on* Oct. 25 Well Attended

AT their meeting of October 25, members of the Southern California Meter Association set a new attendance record, 94 being present at the Club California Casa Real, Long Beach, California, where the meeting was held. After the evening dinner President B. M. Laulhere called the meeting to order and a number of new applicants were voted into membership. By action of the members at this meeting the Association's Standards Committee was given the rank of a permanent committee, Carl Brockman being retained as chairman by unanimous vote. As chairman of a permanent committee Mr. Brockman now is a member of the Association directorate.

Two papers, both of which appear in this issue, were presented at the October 25 meeting and each aroused a spirited general discussion. V. E. Schultz of the Richfield Oil Company gave a paper on "The Accuracy of Orifice Meter Bushings," which was accompanied by a number of stereopticon slides, following which Col. George Sydney Binckley described "The Anubis Differential Pressure Recorder," his own invention.. Two types of his meter and several drawings were displayed.

Another item of interest at the meeting, suggested by Vice-President F. E. Huff, was the taking of a straw vote for the two candidates for the United States presidency.

An innovation suggested by H. E. Thompson which is expected to develop into an interesting feature of Association activity was announced at the October 25 meeting. Each month interested members will be offered an opportunity to register for an educational tour through some Southern California industrial plant, to be conducted by some qualified Association member. On Saturday, October 27, Mr. Thompson conducted the first of these tours through the Los Angeles Gas and Electric Corporation's power plant at Seal Beach. General industrial problems, including many phases of metering, will be the center of interest on these tours.

The next meeting of the Association is called for November 22, again at the Club California Casa Real, Long Beach.

NATURAL GASOLINE PLANT FOR ODESSA, TEXAS

Construction of a large casing head gasoline plant in Odessa, Texas, by the Phillips Petroleum Company, will include, beside the plant and equipment, a two-story office building which will become the west Texas headquarters for the company. The plant will handle between 50 and 75 million cubic feet of gas daily, with an output of 30 to 50 thousand gallons of natural gasoline.

N. M. OIL AND GAS LEASES SOLD AT AUCTION

Twenty-two state oil and gas leases in New Mexico were sold at auction by the Commissioner of Public Lands, October 10th.

The Accuracy *of* Orifice Meter Bushings

By V. E. SCHULTZ
*Richfield Oil Company**

THERE seems to be considerable doubt in the minds of most metermen as to the accuracy of orifice meter bushings. Some say their use will give accurate results, others say their use causes high readings, while others go so far as to refuse to use bushings in any case.

On pages 145 and 146 of "Measurement of Gas and Liquids" by H. P. Westcott and J. C. Diehl, the authors make the following assertions in discussing the vibration of the different pen arm. ". . . . . The vibration can be reduced most satisfactorily when the differential gauges are equipped with small bushings which retard the flow of mercury from the high pressure portion of the gauge to the low pressure portion of the guage, or vice versa. By using these bushings it is possible to automatically average the peaks and hollows of the differential reading, in cases of wells which flow by heads or where a well is supplying fuel to a drilling boiler or any machine at which the consumption of fuel is intermittant, and thereby reduce the time required in the office to estimate the average reading. Bushings installed in the mercury column do not increase the accuracy of the gauge and do not decrease it except where the movement of the differential pen is greatly retarded, requiring more than three minutes to cover the range of the chart. The results obtained from charts where the differential record is averaged in this way will be the same as would be obtained by averaging each fifteen-minute period by inspection." (Mr. Diehl's Handbook of Natural Gas makes practically the same statement.)

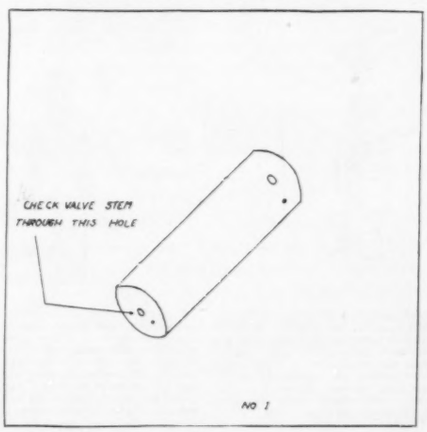
We have been using bushings for several years with excellent results. We have master meters on most of our plants and they usually check within 2 per cent of the fields.

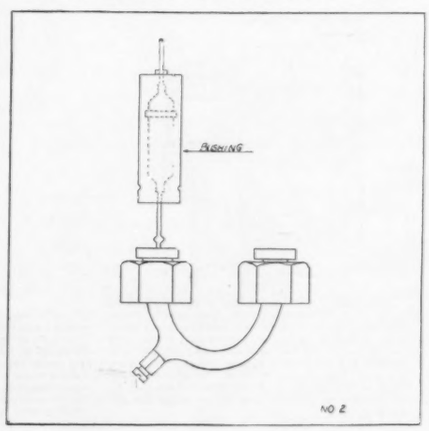
The first time we ever actually checked the accuracy of bushings was with a Foxboro meter in the Los Cerritos field. The well was heading from a differential of 2 inches, to 8 and 9 inches. The vibration of the pen arm made it difficult to keep ink in the pen and the low differential made an accurate reading hard to obtain. The Foxboro Company did not make a bushing at that time, so we had some made ourselves. They are little steel cylinders about 1½ inches long, open at one end and with two small holes drilled in the other. One of these bushings fits in the U-bend of the meter right above the check valve. The end of the check valve fits in one hole and the mercury flows through the other. The latter is much smaller than the hole in a Westcott meter bushing because a smaller amount of mercury passes through.

Before installing the bushing in the meter the 24-hour clock was removed and replaced by a 30-minute clock. A chart was then put on the meter and the clock started. With the chart making a complete revolution in 30 minutes, the heads, of course, were greatly magnified. A bushing was then installed, a fresh chart put on and the clock started again. The two charts thus obtained were taken to the office. The next morning when the regular chart was removed from the meter, we had four different types of differential records taken from the same meter.

Of these four different types there was only one which we were sure was right, namely, the 30-minute chart taken without the bushing. The differentials and pressures on the 30-minute charts were averaged for every 15-minute division on the charts, which was really an average of 18.8 seconds. The sum of the extensions for the 30-minute chart without the bushing was 655.95. For the 30-minute chart with the bushing, the sum of the extensions was 650.16. The difference in the sum of the extensions was 0.88 per cent.

* Presented before the Southern California Meter Association at Long Beach, Calif., October 25, 1928.



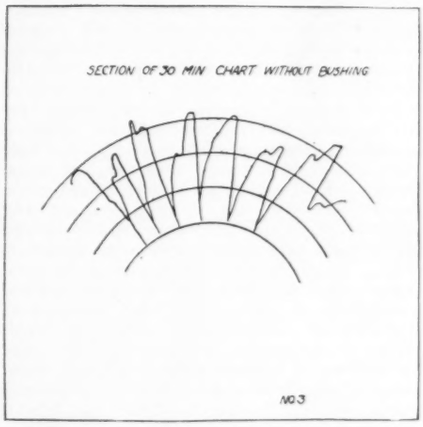


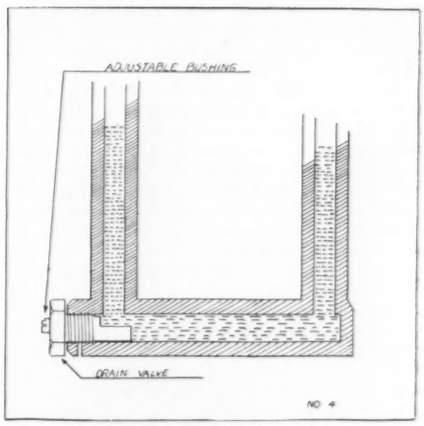
In this particular case the differential was making so wide a line and reading so uniformly on the 24-hour chart without the bushing that it was useless to read the chart hourly, so the differential was averaged for 24 hours. The average differential on the 30-minute chart without the bushing was 8.17 and with the bushing was 7.37, so a much *more* accurate reading was obtained with the use of the bushing—because when a differential is fluctuating greatly and is averaged for 24 hours the reading is high. By reducing or minimizing the fluctuations the error in reading is naturally minimized. Another test was made on the same well a few days later and the results were practically the same.

The new 20-inch Foxboro meter has an adjustable bushing built into the mercury drain screw assembly. It is so constructed that any degree of bushing desired may be obtained by merely loosening a bolt and turning a screw. The bushing is located at the bottom of fairly long column of mercury which eliminates the possibility of the jetting effect which sometimes occurs when the bushing is placed near the top of the column.

Another interesting test was made on a well which was flowing at the rate of more than 4,000 M.c.f. per day. Another company was treating this gas and was metering it and the gas from another of our wells through one meter. We had separate meters on each of the wells and we could not check the readings of the other company within from 6 to 12 per cent. Only one of the wells was making a good chart. The differential of the other was making a solid path 30 inches wide and it was impossible to keep ink in the pen. The gas contained 3.00 Gals. of gasoline per M.c.f., so an error of 100 M.c.f. or so meant considerable difference in dollars and cents. A 30-minute clock was installed in the meter and a test run with and without bushings, similar to the just described. There was about 3 per cent difference in the readings. On inspecting the charts it was found that the heads were much wider at the top than at the bottom and that they were very irregular. This, of course, was not discernible on the 24-hour charts, because there were about 3 heads per minute. The pen itself makes a line about a minute wide. We then carefully calibrated two Westcott meters and connected them to the one orifice flange and installed 30-minute clocks in each. A bushing was installed in one of the meters, the clocks started simultaneously and two sets of charts taken from each meter. Upon analyzing these 30-minute charts it was found that the differential of the charts without the bushing averaged 23.25 inches of water, while those with the bushing averaged 23.82 inches. The difference in the square roots of the differential is .012 per cent. Before installing the bushing we had been averaging the charts for 24 hours and calling the differential around 18.8 inches, so we found that not only we, but the other company as well, had been reading the chart about 9.5 per cent too low; 9.5 per cent of the volume was 450 M.c.f. of 3-gallon gas. This contained 1350 gallons of gasoline per day for which we were not getting credit.

We have made several similar tests on different wells from time to time with the same results. When it is found that a well is heading badly and making a bad chart one should not install a bushing until an effort to improve the condition has been made in other ways. First make sure that it is the well which is causing the trouble and not a bad check valve, regulator, or water in the line. On flowing wells the differential can usually be smoothed out by changing the bean. The irregular flow is usually caused by the gas flowing through the oil and not doing the full amount of work that it should, so if the gas department and the production department can cooperate and work together both will benefit greatly. A change of orifice plates will help in many instances. In most cases a pen that is vibrating badly at 40 inches will slow down and write a good record at 15 inches. Another method is to install a higher range meter. Before a bushing is installed it is of primary importance that the mercury be clean and the pots free from scale, for a particle of dirt that would pass freely through the U-bend might become lodged in the bushing, as the flow increased, and be freed as the flow decreased, or vice versa, and thus cause a false reading.





We have never used deadeners to dcrease differential vibration so I can say nothing about them, but we did try out a shock absorber that is recommended for use in cases of severe vibration. It is made of bronze and the gas passes through a long coil of tubing which gives a deadening effect. It works all right unless scale or oil comes over, in which case it is liable to become plugged. I believe that in most cases the condition can be remedied in other ways without the use of so-called deadeners or shock absorbers.

When a bushing is used a true picture of what is happening is not recorded on the chart. However, as the orifice meter is primarily a measuring instrument, I believe that this makes but little difference, for if one wants to know the existing conditions in the well or line, a pressure-recording gage may be used to advantage.

There are lots of cases where bushings may cause high readings, and there are others where there is a positive or negative flow that does not show up until a bushing is used and its accuracy proved with a 30-minute clock. There are instances where a meter without a bushing will give a false reading. If a well is heading violently, false valleys and peaks are recorded on the chart.

There are cases where bushings may be used to advantage and other cases where it would be out of the question to use them. The results depend upon the care with which each individual case is analyzed before steps are taken to rectify the trouble.

We have found that the use of bushings on badly heading wells gives us a cleaner, neater chart and a 24-hour record of the flow. It takes less time to read the charts and less guesswork in the reading. It is my belief that orifice meter bushings, judiciously installed, make for more accurate measurements.

The Anubis Differential Pressure Recorder

By George Sydney Binckley, C.E.*

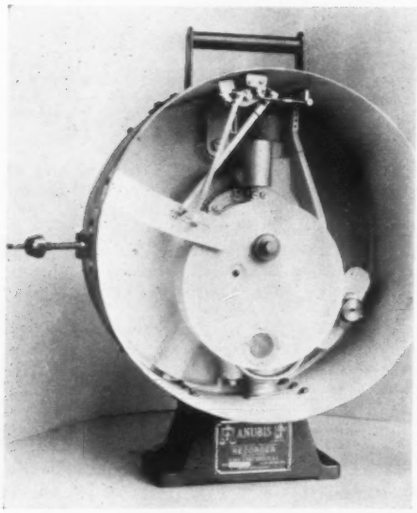
A REALIZATION of the fundamental defects from a practical point of view, of any instrument involving a liquid column, whether of water, mercury, or other available liquid such as carbon tetrachloride, led the writer to undertake the serious investigation of the problem of producing a differential pressure recorder which should be free from the practical disadvantages inherent in the use of the liquid column, and if possible give results of a higher degree of accuracy. Closely associated with this phase of the problem was that of the elimination of anything in the way of a "stuffing box," closely fitted shaft, or any means for the transmission of motion from the inside to the outside of a closed chamber under pressure, which should involve any friction whatever. The critical importance of the effects of even a very small amount of frictional resistance to the motion of the mechanism of such an instrument at very low values of differential pressure was recognized early in this investigation, as at these low values the forces involved approach

*Presented before the Southern California Meter Association, Long Beach, Calif., October 25, 1928.

zero, while the frictional resistances remain constant or even may become greater, as the friction of rest is well known to exceed that of motion.

Early in these studies the importance of the inertia of a liquid column under conditions of pulsation was recognized, and as a consequence it was seen that, whatever the principle finally adopted, the weight and the amount of movement of the working elements of the recorder would have to be kept within close limits to avoid aberrations in the resulting record.

Simplicity and durability in such an apparatus was one of the necessary characteristics to be sought, for under field conditions it canont be expected that these instruments will receive at all times the intelligent and painstaking care that they might receive in the laboratory. It is necessary that, short of actual violence, such instruments should successfully meet without derangement all practical conditions of field use.

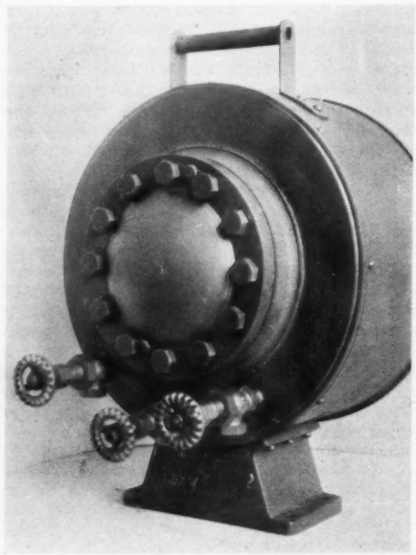


Front view of Anubis recorder, with door removed.

Another conclusion reached during the early stages of this development was that if anything like accuracy was desired under conditions of very low differential pressures, whether for the measurement of water or gas, a relatively large area of working surface must be exposed to the action of the differential pressure in order that at these very low values, the aggregate force developed shall be sufficient to successfully and accurately actuate the mechanism of the recorder. This new principle for obtaining accuracy in the recorder has been incirporated in the design of the Anubis instrument by increasing areas exposed to the action of the differential pressure.

Although the writer experimented as early as 1913 with the use of metal bellows which he had constructed especially for this purpose, it was not so many years ago that a commercial product of this character became available. At this time there are several types of commercially produced metal bellows available which are suitable for use in these instruments, and it is this availability of a commercial product which has led to the adoption in the Anubis as the final substitute for a liquid column, a metal bellows of suitable dimensions as a means for the utilization of the difference between two pressures for the actuation of the mechanism of a recording instrument of this class. The use of the metal bellows instead of a column of liquid permits the proportioning of the working areas to the requirements of accuracy at low values of the differential pressures, while its light weight, the very small amount of movement required, and its resilient qualities adapt it closely to conditions of pulsation of the fluid with which it is filled. One form of metal bellows, which is spun in one single piece, while light and thin, is very resilient, and even in the larger sizes quite strong enough to be used with the highest range of differential pressures actually employed in ordinary practice. However, for any unusual conditions of abnormally high differential, liability to extraordinary shock, or possibility of destructive corrosion, another type of bellows is commercially available which may be obtained of phosphor bronze, monel metal, or steel, so that the choice in the matter of these bellows is satisfactorily wide.

While the problem of resisting the pressure upon these large bellows when the differential pressure is a maximum constituted a serious difficulty, the solution, when found, was simple in the extreme, for no matter how great the force acting against a well-tempered spring well within its limit of elasticity under maximum stress, the deflection of this spring will be strictly proportional to the force applied. Hence it is that the writer finally concluded that, even though the metal bellows might be of large size and exposed to a differential pressure so high as to constitute a very considerable aggregate load to be carried by the master spring, none the less, the deflection of the spring, being of a strict proportionality, would indicate with delicacy even the very lowest values of the differential pressures existing on the bellows. Spring resistance to the aggregate differential pressure was then decided upon, in connection with the use of the metal bellows instead of a liquid column. The elastic resistance of the bellows itself merely contributed to that of the heavy master spring.



Rear view of Anubis recorder, showing gas connections and location of bellows.

The first solution reached in considering the problem of the elimination of the "stuffing box" or the closely-fitted shaft was the utilization of the elasticity of two small metal bellows, in such a manner that the motion of the main bellows and of the master spring which carried the differential pressure load, was transmitted from the bellows inside the pressure chamber of the instrument to the outside, through the axial compression of one of these small bellows, and the axial extension of the other, to the extent of the axial movement of the main bellows inside the pressure chamber. This movement ordinarily has a maximum value of about one-eighth of an inch, so the elastic range of the small bellows was quite sufficient. The deflection of the master spring in the type of instrument employing the two small bellows for the transmission of movement from inside to outside of the pressure chamber was also about one-eighth of an inch, this amount being multiplied several times by the fact that the end of the master spring was extended beyond the point of application of load about six inches.

This in general was the arrangement of essential elements in the rectangular chart type of Anubis recorder. One example of this type of instrument has been constructed of aluminum alloy, and provided with a fast-moving chart mechanism to make it available for use in the study of heading wells or other conditions in which the detail of rapid fluctuations of differential pressure is desired.

In actual practice, instruments of the rectangular chart type have now been in successful use for a year and a half, sometimes under conditions of extreme severity, measuring both gases and liquids, and although they have been at times subjected to accidental conditions of abnormal differential pressure of such a kind as to bend the heavy master springs, collapse the main bellows, etc., it has been found that the master springs when straightened, and the bellows when pulled out to their normal length again, functioned perfectly, with no apparent change in calibration rate.

Successful as the rectangular chart type of instrument was in actual practice, it was found that a strong preference for the disc type of chart existed among most of those who have the care and use of these instruments, so the rectangular chart type will remain a special type in spite of its having some very attractive features. The original disc chart type instrument developed by the writer was intended to be used for a wide range of pressures—up to 250 or 300 pounds per square inch—and was tested up to 500. It is provided with a dashpot for use under conditions of pulsation, and adjustment for range of the static pressure pen from 100 to 250 pounds in the width of the chart. This instrument is in all essentials except for its greater weight, the same as the standard instrument for a range of 150 pounds.

The disc chart type of instrument differs in one important element of its construction from the rectangular chart type, in the fact that in this design there are practically no pressure limitations such as must necessarily exist where the maximum pressure must be carried by the small bellows employed as a substitute for the "stuffing box."

This result is obtained by the application of a principle developed by the writer, which principle may be put in simple form by the statement that it rests upon the elastic deformation of a resilient tube, one end of which is firmly attached to the wall of the pressure chamber, and open to the atmosphere, and the other end of which is within the pressure chamber, and sealed, this sealed end of the tube having firmly attached to it a rod which passes through it without contact with its walls, and out to the atmosphere. It is plain that if a force is applied to this tube within the pressure chamber in such a manner as to pro-

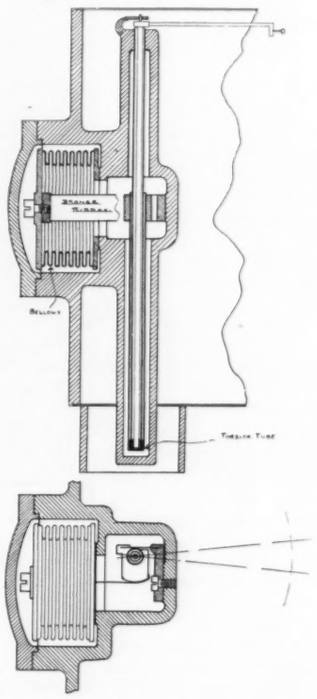
duce a torsional strain whereby the sealed end of the tube is rotated about its axis, the rod which passes out to the atmosphere through the open end of the tube is rotated in the same degree as the sealed end of the tube, and this motion can be employed to actuate a pen arm and record the magnitude of the force producing this rotation.

If as is actually the case, this "Torsion Tube" is of spring-tempered seamless steel, it may be so proportioned as to have strength or elastic resistance enough to easily carry the load of the aggregate differential pressure on the metal bellows as applied to the torsion of the tube through a phosphor bronze ribbon attached to the end of a short lever on the torsion tube. Transverse displacement of the tube is prevented by the provision of another phosphor bronze ribbon connection between the tube and the rear wall of the pressure chamber, so that movement of the end of the tube around its axis does not involve any friction whatever, and as the motion of the lower or sealed end of the torsion tube is transmitted directly to the outside of the pressure chamber through the rod, there is no friction involved in the transmission of this motion, neither is there wear, or possibility of leakage. This set of essential elements constitutes in effect a single piece of metal with the pressure chamber, certain of the elements of this effectively homogeneous structure being resilient, and capable of elastic deformation. It can be seen that up to the point where the rod is lightly guided or centered at its upper end by the small guide provided just outside the torsion tube, there is no possibility of wear, friction, or leakage, and that the only possible friction or wear must be confined to the small pivots which carry the pen arms, and the light links which connect the pen arms to the levers from which motion is derived, all of which are outside the pressure chamber, accessible for adjustment, cleaning and oiling.

In the head of the main bellows in the pressure chamber, two emergency pressure relief valves are provided for the protection of the bellows against destructive pressures. One of these relief valves opens in one direction, and one in the other, so that accidental overpressure from either side of the bellows is prevented. These pressure relief valves are set to twice or three times the normal maximum working differential pressure, so that they remain closed except under extraordinary conditions of abnormal pressure. However, they have a discharge capacity sufficient to insure safety even under extreme conditions of accidental overpressure. The problem of securing perfect seating is recognized in special construction of these valves.

For the static pressure record, the generally known Bourdon tube has been adopted instead of the light helical tube. The reason for this departure from what is a common practice is that the Bourdon tube in the writer's opinion is more reliable and probably more accurate than the helical form, and must less subject to damage in use. Means for accurately utilizing its very limited amount of motion has been provided for in the Anubis recorders by multiplying the movement of the free end of the Bourdon tube by attaching firmly to it a long, rigid arm, which swings through a considerable arc at its upper end, and is at this end attached through a link to the lever which operates the static pen-arm shaft. In this way any necessity for gears, pinions, hair-springs, etc., is avoided and at the same time there is obtained an amount of movement which reduces to a minimum any effect of lost motion in the pivots.

Another innovation in the design of the Anubis recorder relates to the arrangement of the pen arms and pens of this instrument. In the first place, both pen-arms swing freely upon a joint below the shaft, in such a manner that the contact of the pen with the chart is by gravity alone, requiring and indeed permitting no adjustment of this contact. In practice this has been found to be of great advantage, as it is impossible to set the pen so as to produce undue drag, or



Two views illustrating working principle of Anubis differential recorder.

so as to fail to make a record. The pen arms are so arranged that when changing the chart, they may be swung out from the face of the chart, (being retained in this position by a light spring), so as to facilitate changing the chart without smearing it with ink, and the convenient cleaning and inking of the pens. The pen arms are stiff and substantial, of spring hard German silver, and the pens are of 10 carat gold, silver soldered to the German silver carriers so as to prevent corrosion by the ink. The time interval between the two pens is just 15 minutes, and is the same all the way across the chart. At the zero position, the differential pressure pen hangs in a vertical line, so that the difference in the ink load or the type of pen used cannot affect the action of the instrument at the lowest range of differential pressure.

The chart used on these instruments is of standard diameter, having 10 major radial divisions, and the arcs, instead of cutting through the center, are tangent to a circle about one inch in diameter, so that the length of the arc between the first division and the zero is the same as the length of the arc between the last division and the periphery of the chart.

The pen-arm shafts are supported on 60-degree pivot points of tool steel. This type of bearing has many advantages over any other, including ease of close adjustment and original fitting. The adjustment of the pen-arm to zero is made through a small turnbuckle at the front of the instrument, and the same type of adjustment is used for both pens.

While under ordinary conditions the use of a dashpot is unnecessary, it is provided on all instruments to obtain a good record without undue throttling on violently pulsating lines. This dashpot is of relatively large size, has a loosely fitting piston of thin brass, with rounded edges, and clearance enough all around to prevent sticking, even with the use of dirty oil. It is filled when in use with an ordinary light lubricating oil, or in extreme cases of heavy pulsation with a heavy lubricating oil. When in use it is mounted on the stud provided for this purpose, secured by a single screw, and when not in use, is simply removed and set in place on the other stud provided within the case of the instrument. This dashpot is called upon to resist only the force transmitted from within the pressure chamber through the long and relatively elastic tool steel rod actuating the pen-arm, and does not have to resist the pressure of the differential over the whole area of the main bellows.

For locking the chart in place, an interrupted thread nut similar to the "French Breech Block" used on naval guns is employed. This nut slips on straight, and locks the chart on the stud with a quarter turn. The glazed door is secured in its closed position by a single movement of a small toggle lever, the tension of which is quickly adjustable by a single screw. A handle for the convenient transportation of the instrument is placed on top of the case, and the pressure connections are from the rear.

The shell of the instrument case is of welded sheet steel, and the foot below is attached directly to the shell, which, together with the foot, may be removed from the back casting, leaving the entire assembly of the working parts of the instrument accessible for cleaning, adjustment, or repair. The foot of the instrument is adapted to carry it on a bench, rack, or flange screwed on the end of a vertical 2-inch pipe. For this latter purpose a special flange is provided with the instrument, so that it can be screwed on the end of the pipe, and the instrument then put in place and secured with the bolts furnished.

In setting up this instrument exact leveling is not needed, as it can be a good deal out of level without in any way affecting its performance.

This instrument is as well adapted for use with liquids as with gases. Two small plugs are provided at the upper edge of the back flange, which are taken out when the instrument is to be filled with liquid, drained, or opened for cleaning out with gasoline in case it has become too foul with an accumulation of grease, etc., through long use. In general, condensation in this instrument will not affect its accuracy or its calibration rate, even though the zero point may be affected. In this case, all that is required is to readjust to zero.

With the Anubis recorder it is practical to use a large orifice, because of the accuracy of the record at low differential pressure.

Summing up the principal characteristics of the Anubis recorder, they are:

Absence of any liquid column.

Absence of friction or wear, in the interior of the instrument.

Elimination of the "stuffing box."

Safety against overpressure, through careless manipulation of valves.

Extreme delicacy in its responsiveness, together with effective damping under conditions of pulsation.

Permanent accuracy throughout the differential range.

Gravity-controlled pressure on pens.

Compactness and strength of construction.

Adjustability of static pressure range.

Simplicity.

Tenth National Convention Calls 5,000 *to* Atlantic City

THAT the American Gas Association continues to exert a very real influence toward the unification and betterment of the national gas utility industry was evident on every hand as that industry convened at Atlantic City for the A. G. A.'s Tenth Annual Convention, October 8-11. Steady growth in Association membership was revealed in the report of Managing Director Alexander Forward, presented at the Tuesday morning general session, October 9, and showing a grand total of 6,364 in the A. G. A. family. Making up this total are 25 holding companies, 625 gas companies, five foreign companies, 22 associate companies, 536 manufacturer companies, 5,147 individuals, and four honorary members. Those directing the Association may congratulate themselves upon the high proportion of this membership registered at the Tenth Convention, it being estimated that well over 5,000 attended the Atlantic City session.

NATURAL GAS KANSAS CITY MEETING

In spite of the fact that the Natural Gas Department is again programming its own annual convention there was a good sprinkling of natural gas men on hand for a special meeting during the Atlantic City convention, presided over by Samuel W. Meals, chairman of the Department. At this meeting it was decided to hold the next general gathering of the natural gas men in Kansas City some time next May. Another decision affecting work of the Natural Gas Department was the determination to move the office of the Department's secretary to Pittsburgh, Pa. Present officers of the Department will retain their positions until September 30, 1929, their successors to be chosen at the beginning of the A. G. A. fiscal year as in the case of other A. G. A. officials. All officers of the department were re-elected, Henry C. Morris of Dallas continuing as vice-chairman.

Pacific Coast delegates to the A. G. A. session are named on the P. C. G. A. pages of this issue. General interest centers upon the invitation extended by President C. H. Dickey of the Pacific Coast Gas Association to the American Gas Association Advisory Council to hold a meeting on the Pacific Coast next February.

1928-29 OFFICERS

In line with the recommendations of the A. G. A. Nominating Committee the following men were called into Association leadership for the year 1928-1929:

For President—Oscar H. Fogg, vice-president, Consolidated Gas Co. of New York, New York, N. Y.

For Vice-President—Bernard J. Mullaney, vice-president, The Peoples Gas Light & Coke Co., Chicago, Ill.

For Treasurer—Clifford E. Paige, vice-president, The Brooklyn Union Gas Co., Brooklyn, N. Y.

For Directors (two-year term)

R. B. Brown, Milwaukee Gas Light Co., Milwaukee, Wis.

Henry L. Doherty, H. L. Doherty & Co., New York, N. Y.

W. W. Freeman, Columbia Gas & Elec. Corp., New York, N. Y.

R. C. Hoffman, Jr., Standard Gas Equipment Corp., Baltimore, Md.

Samuel Insull, Jr., Midland Utilities Co., Chicago, Ill.

J. B. Klumpp, The United Gas Improvement Co., Philadelphia, Pa.

J. D. Creveling, H. L. Doherty & Co., New York, N. Y.

F. A. Lemke, Humphrey Co., Kalamazoo, Mich.

C. R. Pritchard, Lynn Gas & Electric Co., Lynn, Mass.

Sectional nominating committees are submitting the following to serve as Section officers for the year 1928-1929:

Accounting Section: Chairman—F. H. Patterson, Rochester Gas & Electric Corp., Rochester, N. Y.

Commercial Section: Chairman—G. M. Karshner, Consolidated Gas Co. of New York, New York, N. Y.; Vice-Chairman—G. E. Whitwell, Equitable Gas Co., Pittsburgh, Pa.

Industrial Gas Section: Chairman—J. P. Leinroth, Public Service Electric and Gas Co., Newark, N. J.

Manufacturers Section: Chairman—H. Leigh Whitelaw, American Gas Products Corp., New York, N. Y.

Publicity and Advertising Section: Chairman—E. Frank Gardiner, Midland Utilities Co., Chicago, Ill.

Technical Section: Chairman—H. E. Bates, The Peoples Gas Light and Coke Co., Chicago, Ill.

As is always the case the manufacturer's exhibits formed a most valuable feature of the convention, exhibit space on the Million Dollar Pier being taxed to capacity by the 270 individual displays. Without exaggeration this year's exhibits were the largest and best yet staged.

Various program features from the A.G.A. sessions will be found on other pages of this issue of *Western Gas*, and attention is particularly directed to the address of Walter M. Harrison, president of the American Society of Newspaper Editors, whose remarks on "The Public Relations Man and the Editor" comprise an unusually sane comment upon the Federal Trade Commission investigations.

1928-1929 Calendar

California Natural Gasoline Association—Los Angeles, November 13 and 14.

Second International Conference on Bituminous Coal—Pittsburgh, November 19-24.

Southern California Meter Association—Long Beach, November 22.

Rocky Mountain Oil and Gas Association—Great Falls, Mont., November 23 .

American Society for Steel Treating—Los Angeles, January 14-28, 1929.

Western Metals Congress—Los Angeles, January 14-28, 1929.

Western States Metal and Machinery Exposition—Los Angeles, January 14-28, 1929.

Oklahoma Utilities Association—Oklahoma City, March 12, 13, 14, 1929.

Natural Gas Dept. of A. G. A.—Kansas City, May, 1929.

P. G. *and* E. Sets Up High Totals *in* Sales Race

RESULTS of the 11 weeks water heater campaign of the Pacific Gas and Electric Company, which was recently brought to a successful close, are decidedly impressive as a sales achievement. The company put 1,485 automatic water heaters on its line by direct sales, and plumbers and dealers sold an additional 2,750 heaters during the campaign period, making one of the most conspicuous pieces of sales activity that this utility has ever conducted.

The system of compensation, sales prizes and other details of the water heater campaign organization were described in *Western Gas* for August, 1928. As there stated, salesmen were employed on a straight commission basis with a drawing account of $100 allowed against these commissions. The commission rate paid was 20 per cent minus one-half of the trade-in allowance on old equipment where trade-in was made. The maximum limit of trade-in allowance was set at 10 per cent of the price of the new equipment, but because he was financially interested in the amount of the net sale, the salesman naturally made every effort to drive a close bargain.

Employees not on the sales force turned in a total of 1,407 prospects, of which 408 were sold. Employees who reported these salable prospects were paid $2.50 per heater sold through their leads.

As a result of the advertising direct to employees, and a special discount of 25 per cent allowed to employee purchasers during the season, 156 sales were made in this class alone.

One hundred and fifty per cent of the quota set is the enviable record attained in the P. G. and E. water heater drive. When the results were totaled it was found that the North Bay Division stood first, Coast Valleys second, and San Jose third. The grand prize to salesmen was won by V. R. Schneider of the North Bay Division, who sold 122 automatic water heaters, and took the coveted trip to the P. C. G. A. Convention at Coronado by virtue of his victory.

ANNUAL SURVEY SHOWS GAIN IN NATURAL GAS PRODUCTION

The total amount of natural gas produced and delivered to consumers in the United States in 1927 was 1,445,428,000,000 cubic feet, an increase over 1926 of 132,409,000,000 cubic feet, or 10 per cent, according to figures released by the United States Bureau of Mines. In 1927 there were 3,984,000 domestic consumers of natural gas in the United States who used a total of 296,036,000,000 cubic feet of natural gas during that year. This represents an increase in domestic consumers of 253,000, or seven per cent, but an increase in total consumption of only two per cent. The average consumption per customer was lower for the fifth successive year and for 1927 amounted to 74,300 cubic feet as compared with 77,500 cubic feet in 1926. This decrease is attributed to increased efficiency on the part of the consumer in using natural gas. There was a gain of 12 per cent over 1926 in the total consumption of gas by industrial users.

SIR HERBERT HOLT VISITS CO. HOLDINGS AT VANCOUVER

Sir Herbert Holt, one of the new directors of the B. C. Electric Railway Company, Ltd., last month visited some of the company's holdings at Vancouver and Victoria, B. C.

Fall Meeting Program *of* Gasoline Association

THE California Natural Gasoline Association has made announcement of a tentative program for its annual fall meeting, to be held this month, November 13 and 14, at the Hotel Biltmore, Los Angeles, Calif. Following is the advance program for the two-day meeting:

TUESDAY, NOVEMBER 13TH

8:00 a. m.. Registration: Foyer of Ballroom, Biltmore Hotel.

9:30 a. m. President's Address: George Ratcliffe, General Petroleum Corporation of California.

10:00 a. m. Paper: "The Compression of Gasoline Plant Vapors"; prepared by a Committee of the California Natural Gasoline Association, and presented by the Chairman, J. C. Bolinger of the General Petroleum Corporation of California.

10:45 a. m. Paper: "The Determination of the Vapor Pressure of Natural Gasoline"; prepared by the Vapor Pressure Committee of the Association and presented by H. N. Wade of the J. A. Campbell Co.

2:00 p. m.—Paper: "Use of Gas and Gasoline Analysis in the Practical Operation of a Gasoline Plant"; prepared by the Gas Analysis Committee of the California Natural Gasoline Association under the direction of A. J. L. Hutchinson of the Engineering Research and Equipment Co.

3:00 p. m. Paper: "Some Considerations Affecting Absorption and Distillation in Natural Gasoline Plant Design and Operation"; by E. G. Ragatz of the Union Oil Co.

WEDNESDAY, NOVEMBER 14TH

9:30 a.m. Address: "The Value of Natural Gasoline to the Refiner in Blending Finished Motor Fuels"; by Dr. George Granger Brown, Professor of Chemical Engineering, University of Michigan; Director of Research for the Natural Gasoline Association of America.

1:30 p.m. Continuation of Dr. Brown's address.

7:00 p.m. Banquet and Entertainment for members and visitors; Biltmore Hotel Sala d' Oro.

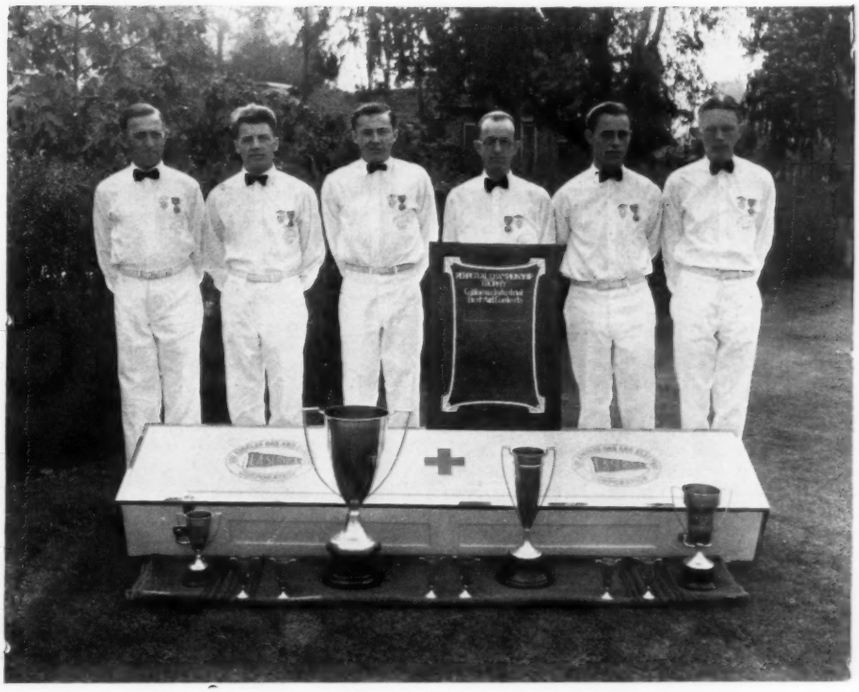
ARKANSAS NATURAL COMPLETES GARLAND CITY-TEXARKANA LINE

The Arkansas Natural Gas Corporation recently completed 20 miles of 10-inch gas line from its main trunk line near Garland City, Arkansas, to Texarkana. This is the second line to Texarkana, the other being an 8-inch line from the Pine Island gas field in Louisiana.

Arkansas Natural also has under way now a 10-inch line from the Clarksville, Arkansas, field to Little Rock, in order to meet the increasing demands in that city. This line will serve Conway and a number of cities and towns in the Arkansas River Valley, along the route to Little Rock.

GAS SERVICE CO. SECURES PIERCE CITY, MO., FRANCHISE

A gas franchise was given the Gas Service Company at Pierce City, Missouri, at a special election held on October 9th. Other cities along the route of the proposed Gas Service Company line from Joplin to Springfield will be holding franchise elections in the near future. Among the towns with which negotiations are being made, are Monett, Mount Vernon and Aurora.



Winners in California Industrial First Aid Meet. Left to right: H. L. Eyer, L. L. Kullgren, J. A. Schneider, Jr., H. F. Lougee (Captain), M. N. Worthington, P. W. Jacobsen.

L. A. Gas and Electric Corporation Wins State Honors *in* First Aid Contest

THE Los Angeles Gas and Electric Corporation First Aid Team of the Gas Distribution Department, Pasadena District, took highest honors in the Sixth Annual California Industrial First Aid Meet held at San Francisco October 17th to 20th, competing against eighteen of the leading First Aid teams of the State, divided into the following divisions: Municipal, Public Service, Manufacturing, Mining and Petroleum.

Members of this winning team are recruited from the Gas Distribution Department, Pasadena District, under the direction of Geo. S. Campbell, Asst. Superintendent, who states that since the organization of First Aid, accidents have been materially reduced. The team was awarded for first prize eight silver cups, a metal plaque, $120 in gold, 6 silver medals (National Safety Council), and 6 bronze medals (American Red Cross). The Public Service Divisional prize, a silver cup, was also won as well as the special Resuscitation Problem Prize, a silver cup.

On the team are: H. F. Lougee, captain, P. W. Jacobsen, L. L. Kullgren, J. A. Schneider, Jr.; M. N. Worthington and H. L. Eyer.

The State First Aid Meets are held annually under the auspices of Society of Safety Engineers of California, Division of Industrial Accidents and Safety, State of California; United States Bureau of Mines, National Safety Council, and American Red Cross and have yearly proven of greater interest and keener competition.

Other honors in the contest were taken by the Richfield Oil Co., second; Associated Oil Co., third; and Union Oil Company, fourth place.

STOCK IN CITIES SERVICE CO. TO BE SOLD BY EMPLOYEES

Employees of the Empire Companies throughout the middlewestern states will offer securities of Cities Service and Empire Companies to the public again during the period from November 10 to November 22. This will be the tenth similar securities campaign conducted by Empire employees.

EMERGENCY MAINS FOR AIR MEET INSTALLED BY SO. CAL. GAS CO.

Feeding of 10,000 people daily at the International Air Exposition was made possible by emergency installations of gas mains by the Southern California Gas Company. Gas was furnished for the restaurant and also for the various stands by the company.

MUSKOGEE VOTERS GRANT PERMITS TO TWO COMPANIES

Voters of Muskogee, Oklahoma, on October 23 defeated a proposed $1,250,000 bond issue for a municipal natural gas system, at the same time granting franchises to the Muskogee Natural Gas Company and the Municipal Gas Corporation for distribution of gas in that city. Oklahoma Natural Gas Corporation already holds a franchise at Muskogee.

NEW CARBON BLACK PLANT FOR WESTERN CARBON COMPANY

According to press reports a 50,000,000 foot capacity carbon black plant will be constructed by the Western Carbon Company, a subsidiary of the Columbian Carbon Company, in Hutchinson County in the Texas Panhandle. Residue gas from the natural gasoline plant of the Phillips Petroleum Corporation will be the source of gas supply.

Dallas Contest Advertising Used *to* Back Community Project

By Lois Upshaw
Advertising Manager, The Dallas Gas Company
Dallas, Texas

CONTEST advertising is only an occasional luxury with the Dallas Gas Company. For one thing, we think it is worth more when it comes infrequently. And since we do not sell appliances, we are fairly free from temptation.

When the Dallas Little Theatre announced the opening play of the new season, however, "What Every Woman Knows," a Barrie comedy about a woman with great charm and gifts for management, we indulged ourselves with a little contest. It was too good a chance to lose. "What Every Woman Knows About Gas in Home Management" was the subject, and we invited letters from all Dallas women.

The prizes cost $25.00—one season ticket to the Little Theatre, and four pairs of seats for the Barrie play. (If the returns had been larger than we guessed, we should have added more prizes to the "takes" announced.) The advertising cost, three advertisements in four papers, does not need to count as contest expense, because we consider that as regular everyday gas advertising, it was worth the price.

Some cities may take their Little Theatre casually, but not Dallas. In Dallas, Little Theatre affairs make live news any day. The whole town is interested in it, and sometime during the year nearly everybody, or at least one of his kith or kin, works in a production. Three times in succession the Dallas players have brought back the Belasco Cup from New York, the annual trophy in the National Little Theatre Tournament. Dallas has been host to three Texas tournaments.

PLAYHOUSE GAS EQUIPPED

The beautiful new playhouse is one of the show places of an affectionate citizenship. And of course it burns the city's natural gas. Most of the members, and scores of visitors, have gone all over the place, and in the basement they see a small shining white boiler—the little thing pops off at 10 pounds pressure—that warms the theatre with a fan system. There are gas-steam radiators in the box office, the executive offices and back stage, to use between plays. And there is a gas-fired kitchen.

So it was easy to make profitable "town talk" out of a Gas Company contest that advertised the Little Theatre. We said at the start that 40 letters would satisfy us. And exactly 40 came in. The prizes were so modest that they would not appeal to the habitual "contestant". And the hundreds of women members who work for the Little Theatre, who were interested in, and pleased with, the idea, and who discussed it among themselves, would not try for a prize. But they liked the Little Theatre advertising, and felt that the publicity was a gracious gesture on the part of the Gas Company. Several women said as much in conversation with us, and some men spoke likewise.

The letters themselves make interesting material in our reference library. The prize letter was a jolly piece done in rhyme. One striking thing about the collection is an almost invariable use of lines and whole arguments from Gas Company advertising itself. Much of it was not recent material

Want a
Season Ticket to the
Little Theatre?
We see by the papers that the Little Theater is opening the new season October 15th with a Barrie comedy, "What Every Woman Knows." It is about a Scottish lady of great char-r-rm, who is a fine manager
Although there are no stoves, furnaces or water heaters in this play, we have an idea. We should like to give a season ticket for the best piece on "What Every Woman Knows About Dallas Gas in Home Management."
Ourselves, we have a feeling that Dallas gas is responsible for a great deal of the char-r-rm of our own women citizens . . because of their freedom and peace of mind in having a spotless, inexpensive, instantaneous fuel on tap from mor-r-rning until night, and all night, too. But, of course, we may be prejudiced in our own favor. So we shall enjoy having some letters from Dallas women who use the city's natural gas, to see how they like it, and why.
The Particulars
Write plainly in ink or on typewriter. Not over 200 words.
Address it to Contest Department, the Dallas Gas Company, and have it here on or before Wednesday, October 10th.
The SECOND, THIRD, FOURTH and FIFTH prizes will each be a pair of good seats for "What Every Woman Knows."
Prizes will be announced October 13th.
The Judges
Mrs. Curt Beck, chairman of the Women's Guild of the Little Theater
Mrs. Alex Spence
Mrs. Joe Perry
THE DALLAS GAS COMPANY
Dispensers of Natural Gas

either, so it showed that what we say does stick in the minds of some people. This element in the letters was a disappointment to the advertising department, which was looking forward with eagerness to some brand new ideas, and to some unconventional, smart writing. Very little in this category showed up. But as for wholehearted enthusiasm, nobody could ask for more. Many of the women made stronger statements on the value of our gas than we ourselves should dare to make. From spiritual gain to money left over for clothes; from healthful air for children to light-hearted husbands, the benefits that come from Dallas gas were listed in heartfelt sincerity.

We gave a luncheon for the judges when it was over, and they told us it was hard work grading the papers and totaling up the delicate fractions in averages. But they insisted that we give another one sometime soon, and let them serve again. And we probably shall. Something will turn up to tempt us

MISS ALLOBACH IS APPOINTED TO ORANGE COUNTY POST

Isobel Allobach has been named by the Southern Counties Gas Company as Home Service Director for Orange County, taking the place vacated by Rita Connor, who has left the service of the company to be married. Miss Allobach was transferred from the Santa Monica office of the company.

CHANGES IN CITIES SERVICE GAS CO. PERSONNEL EFFECTED

Several changes in the personnel of the compressor station department of the Cities Service Gas company were recently effected, occasioned by the construction of the Higgins, Texas and Corwin, Kansas stations. Completion of the 20-inch pipeline from Amarillo, Texas, to Ottawa, Kansas, made erection of the new compressor stations necessary.

E. M. Rowland, superintendent of the Tallant compressor station, was promoted of the compressor station department and will have direct supervision of the stations on the old Empire and Kansas Natural system. This position was formerly held by Bert Milan, who was promoted September 1 to his present post at Wichita, in charge of compressor stations on the Texas-Kansas gas carreir.

Melvin L. Place, superintendent at Hogshooter for the past year, has been transferred to Higgins, Texas, and will direct the operation of the new compressor station now under construction.

J. H. Richardson, who has supervised the operation of the Wichita compressor station for the past 12 months, was transferred October 1 to the Corwin station where he will hold a similar position.

E. E. Van Lanningham, who will assume Mr. Richardson's former duties at Wichita, is one of the veteran employes of the Empire organization, having been employed at Petrolia in July of 1905 when that station was under construction.

Coincident with several changes effected October 1, H. L. Hunsaker, superintendent of the Grabham station, was transferred to a similar capacity at Mooreland and O. W. Price, who has been at Mooreland since November, 1927, will direct the operation of Grabham.

HOLDERS OF FRANCHISE IN SALT LAKE ASK PERMIT

Following the granting of franchises to operate a natural gas service in Salt Lake City and various other points in Utah, to the Ohio Oil Company, the Lone Star Gas Company, and allied interests, application was made with the state utilities commission late in October by John McFayden and L. B. Denning representing the franchise holders, for a certificate of convenience and necessity to lay a pipe line for natural gas through Sweetwater, Unita and several other northeastern counties. The route of the proposed line is from Baxter Basin, Wyoming, to Salt Lake City, and the estimated cost of the project is approximately $2,000,000. Decision of the commission is expected to be rendered shortly.

PUEBLO GAS & FUEL CO. ARE EXTENDING MAINS

Construction of a new high pressure natural gas feeder main by the Pueblo Gas & Fuel Company, Pueblo, Colorado, has been started The cost of building the main will be approximately $50,000 The main will be 10 inches in diameter and will service the northern limits of the city. Laying of the new main was originally scheduled for 1929, but increased business has made immediate construction necessary.

P. G. AND E. CO. HAS FRANCHISE TO SERVE WILLOWS

Pacific Gas and Electric Company of San Francisco has been granted a franchise for the distribution and sale of gas in the town of Willows, Calif.

INTERNATIONAL COAL MEET TO FEATURE GAS PRODUCTION

AT least three sectional meetings on gas production are tentatively scheduled during the Second International Conference on Bituminous Coal at the Carnegie Institute of Technology, November 19-24, 1928, according to an announcement from the Pittsburgh institution.

England, France, Germany and the United States, it is announced, are represented by the speakers who will participate in the sectional meetings on gas production. Among these will be Dr. Alfred Pott, Essen an der Ruhr, Germany, who will speak on "Transmission of Coke Oven Gas in Pipe Lines in Germany"; C. Simon, of Paris, France, who has devised a method of propelling automobiles or autobuses by means of compressed gas packed away in a small tube at the side of the car; Dr. E. W. Smith, technical director of the Woodall Duckham Companies, London, on "A Study of Comparative Costs of Gas Production in the Retort House"; Jean Bing, Paris, France; William B. Chapman, director of the Chapman-Stein Company, Mt. Vernon, Ohio, on "Producer Gas for Boiler Heatings"; F. C. Greene, The Old Ben Coal Company, Chicago, on "Low Temperature Phantom"; and Professor Wilbert J. Huff, on "Some Phases of the Organic Sulphur Problem in the Manufacture and Distribution of Gas."

In addition to the sections of gas, it is announced, there will be section meetings on low temperature distillation, origin, composition and classification of coal, pulverized fuel, fertilizers, purification and cleaning of coal, liquefaction of coal, power and combustion, high temperature distillation, tars and oils and several general sessions to hear addresses by Lord Melchett and Dr. C. H. Lander, of England; Georges Claude, of France; Dr. Friedrich Bergius, Dr. Carl Krauch, Dr. Fritz Hoffmann, and Dr. F. zur Nedden, of Germany; Dr. S. W. Parr, Dr. Hugh S. Taylor, Dr. Arthur D. Little, Dr. H. C. Parmelee, Dr. E. E. Slosson, Dr. David White, Howard N. Eavenson, and F. G. Tryon, United States. More than a hundred speakers from 12 nations, and delegates and visitors from eight other countries, will take part in the Coal Congress.

MERCO NORDSTROM ISSUES NEW CATALOGUE ON VALVES

The Merco Nordstrom Valve Company, subsidiary of The Merrill Company, Engineers, has just issued a new catalog on valves and lubricants suitable for valve service. It is an illustrated, bound book of 142 pages, containing illustrations and detailed descriptions of many different types of Nordstrom valves, service cocks, parts, accessories and lubricants, together with tables of sizes and measurements and illustrations of installations now in service in the gas industry. Copies of the Catalog may be obtained by writing to Merco Nordstrom Valve Co., 343 Sansome Street, San Francisco, or 11 W. 42nd Street, New York City.

ALL-GAS CAFETERIA IS FEATURE OF NEW B. C. SCHOOL

Installation of gas service for the largest all-gas school cafeteria in Vancouver has been completed at the new technical school in that city by the new business department of the B. C. Electric Railway Company. The installation included four heat controlled ranges, a double-decked heat controlled bake over, a large gas filled steam cooker and an instantaneous automatic water heater. It is expected that the cafeteria will serve on an average of 2500 meals per day.

Graf Zeppelin Fuel Is Obtained *from* Natural Gas Product

THE Graf Zeppelin, monster German dirigible which recently left the United States on its return trip to Germany, obtained fuel for its return trip from a byproduct of gas obtained from the Louisville Gas and Electric Company, a subsidiary of Standard Gas and Electric Company, according to T. B. Wilson, vice president and general manager of the Louisville Company.

How the manufacture of this new gaseous fuel was prompted by the visit of the Graf Zeppelin to the United States has been described by Herman Heck, chemical engineer of the Louisville Gas and Electric Company. The new fuel is ethane gas made by a fractionating process from natural gas, for use in the motors of the huge dirigible. Ethane gas has a specific gravity of 1.04, approximately the same as air, and when carried in balloon nets does not increase the Zeppelin's load, and when it is burned in the motors does not decrease the load as gasoline or any other liquid fuel would, it was explained.

One million cubic feet of the new fuel was manufactured by the Kentucky Oxygen-Hydrogen Company at a plant built especially for the purpose at Winchester, Kentucky, and was shipped to Lakehurst, New Jersey, October 1. The gas was made under the supervision of R. W. Bottoms, recognized as an authority on helium gas and fractionating processes. Mr. Bottoms, who is now director of research for the Kentucky Oxygen-Hydrogen Company, formerly was a lieutenant in the United States Navy and connected with the Navy's helium gas explorations and researches.

The United States Navy department, which had been asked by Dr. Hugo Eckener, commander of the Graf Zeppelin, to ascertain if a gaseous fuel could be made in this country for the dirigible's return flight, communicated with Mr. Bottoms and his company and they agreed to make necessary experiments.

As a result of these experiments, in which the Louisville Gas and Electric Company cooperated, it was found that a byproduct gas from the Louisville Gas and Electric Company's gasoline manufacturing plant at Winchester, Kentucky, had a forty to fifty per cent ethane content. This gas is a byproduct of the natural gas from the eastern Kentucky fields, used in the manufacture of gasoline. Mr. Bottoms developed his own fractionating or separating apparatus, and with the assistance of Mr. Heck manufactured the 1,000,000 cubic feet of ethane gas from approximately 3,000,000 cubic feet of byproduct gas. The fractionation was conducted under a pressure of 250 pounds and a temperature of about minus fifty degrees Fahrenheit.

Mr. Heck declares that ethane gas very nearly approximates the German blau gas, a byproduct of manufactured gas used as fuel by the Graf Zeppelin on its flight to the United States. Hydrogen gas was used in the dirigible's bag to sustain it in the air, and the blau and ethane gases were carried in small balloon nets underneath the large bag.

Lieutenant Commander Z. W. Wicks, in charge of the fuel arrangements for the Graf Zeppelin, in a telegram to E. G. Luening, vice president of the Kentucky Oxygen-Hydrogen Company, said: 'Fuel gas tests in German engine completely satisfactory. Germans say gas is superior and has higher calorific value than their own."

LOWER GAS RATES NOW IN FORCE AT CHICKASHA, OKLA.

Lower gas rates have been put into effect at Chickasha, Oklahoma, by the Southwestern Light & Power Company, which distributes natural gas to this city. The rate on the first 100,000 cu. ft. of natural gas used per month has been reduced from 42 cents per thousand cubic feet to 40 cents and from 17½ cents on the next 100,000 cubic feet to 15 cents. Those using over 200,000 and up to 5,000,000 cubic feet will also secure a reduction in rates. John B. Nichlos, who has a natural gas supply near the city, has applied to the State Corporation Commission for authority to secure a natural gas distribution franchise in Chickasha.

NEW ORLEANS CO. EDUCATES CONSUMERS FOR SAFETY

During the introduction of natural gas in New Orleans, New Orleans Public Service, Inc., utilized its consumer publication, "Service," to good advantage to educate gas users on necessary precautions incident to the use of the new fuel. A question and answer department was conducted covering information on adjustments, and company patrons were urged to consult licensed master plumbers or water heater dealers for the necessary appliance adjustments, a list of water heater dealers being published for the consumers' convenience.

WESTERN ICE & UTILITIES CO. TO SERVE ANTHONY, KANSAS

Western Ice & Utilities Company, which holds the natural gas franchise at Anthony, Kansas, has completed its main 6-inch line to the Cities Service Gas Company's 20-inch line and will start taking gas within the next few days. Its distribution system is practically complete and it is understood that in a very short time residents of Anthony will have the advantage of natural gas in their homes.

APPLICATION MADE TO SERVE LITTLE, COLO., WITH GAS

The Engelwood & Littleton Gas & Coal Co. filed application with the state public utilities commission during the past month for permission to construct a pipe line and plant for the purpose of furnishing natural gas to Little, Colorado, and residents in that vicinity. The gas would be purchased from the Amarillo-Denver pipe line.

W. E. CLEMENT OF NEW ORLEANS RETURNS FROM EUROPE

W. E. Clement, commercial manager of the New Orleans Public Service, Inc., returned late in October from an extensive trip through Europe. Mr. Clement visited England, Scotland, Ireland, France and Switzerland.

Definite Statement *on* Proposed Line *to* Northern California

EARLY in October a definite statement on the proposed plan for bringing natural gas to San Francisco and vicinity from Southern California fields, which has been the subject of varied rumors for many months, was released by the interests involved. The Pacific Gas and Electric Company, The Southern California Gas Corporation and the Pacific Lighting Corporation are the principals in the line project, and have placed with the California Railroad Commission a proposal looking towards the utilization of large volumes of natural gas in San Francisco, Oakland, other cities in the vicinity of San Francisco Bay and along the route of the proposed pipe line including San Jose, Fresno, and certain other cities such as Visalia, Hanford, Tulare, Porterville, and others in the San Joaquin Valley south of Fresno. It may safely be estimated that some 2,000,000 people will benefit from the widening of natural gas supply through the proposed plan, and a considerable saving in gas rates is seen as probable.

The following statement from A. B. Macbeth, president of the Southern California Gas Company, outlines the plan as follows:

"The general plan contemplates the organization of the Northern California Gas Company, which will be owned by the Pacific Gas and Electric Company, the Southern California Gas Corporation and the Pacific Lighting Corporation. This Company contemplates building 220 miles of 20-inch pipeline from Buttonwillow, in Kern County, to San Jose. Transmission lines will be run eastward from this main line to the Southern California Gas Company's properties, lying in Tulare and Kings Counties, and to the Pacific Gas and Electric Company's properties in the vicinity of Fresno."

It is understood that under the proposed plan the Pacific Gas and Electric Company would construct two branch lines from Milpitas, terminus of the main line north near San Jose, one leg running to San Francisco and the other to Oakland, Berkeley, and other east bay communities.

Mr. Macbeth's statement continues:

"To supply gas for this line the Southern California Gas Corporation and the Pacific Lighting Corporation's interests plan to build a 12-inch line north from Ventura to Buttonwillow with a capacity of approximately 25,000,000 cubic feet of gas a day. In addition to this the Pacific Gas and Electric Company is planning to make contracts for the purchase of additional gas from the Southern California Gas Company, and from the Milham Exploration Company operating in the Buttonwillow gas field.

"It is expected that the total cost of these lines, including those laid by Pacific Gas and Electric Company, and the necessary equipment, will be approximately $16,000,000, and that these lines and equipment will have an initial capacity of approximately 60,000,000 cubic feet of gas a day for the San Jose terminal in addition to the gas used in the San Joaquin Valley towns."

The Public Relations Man *and the* Editor

(*Continued from Page 19*)

Neither does the daily grist from the Anti-Saloon league, the Plumbers association, the brick manufacturers and the eat-more-alfalfa-daily press agents cause me to lose any sleep. I know propaganda when I see it. Nor is this conceit. My newspaper service is somewhat parochial and limited to a short 20 years. But every man in the business of the same experience sifts many bushels of propaganda chaff daily and occasionally finds a grain of wheat worth printing.

"KEEP THE PROPAGANDA COMING"

Keep the propaganda coming. Everybody else is doing it. The public relations man today must be clever indeed to make his work stand out in such a way that it will get attention in a welter of indifferently written and poorly printed material.

Base your public relations policy on the theory that the public is entitled to all of the facts. Give information. Give it all. Give it exactly and present it in such a way that the lay mind can get a picture of it. Be as quick to get unfavorable things about your utility to the newspapers as you are to rush to the papers with information you thing the people ought to have.

Your state committees have done a great work. A decade ago the cry against you was that you were a secretive lot who took all and told nothing. Now the Federal Trade Commission is on you for telling too much.

Owen D. Young of the General Electric Company touched the button not long ago when he said: "The danger is that the growth of our industry will outrun public understanding; that the people will see and fear our size without understanding our service."

Organization of consolidations and holding companies developed far more rapidly than your information and publicity programs. You have been so busy expanding that you have given little thought to what the neighbors say about you. The need is for better public relations, better information, an increasing advertising program to acquaint the people with the facts of your business.

BUSINESS NEWS IS REAL NEWS

There are probably 14,000,000 utility customers, investors and employees in the United States. Activities of these groups, the facts about the business units, are legitimate news which editors are looking for. My personal opinion is that more business news is a splendid antidote for prize fight ballyhoo and Chamber of Commerce "baloney."

The public utilities of the nation spent $25,000,000 in advertising in 1927. I hope every dollar of it was purchased on a business basis. If you spent a dollar for advertising copy to sweeten a local editor in the hope of getting him to help your local franchise on his editorial page you were a sap, and you offered an insult to the whole newspaper profession.

Editors are not bought with advertising. This statement goes for 95 per cent of the metropolitan press. Any suggestion to the contrary causes me to question the intelligence of the man who makes it. If any public relations man is employed on that theory, he ought to be out next week, because he is damaging your standing with the newspapers and with the public.

I am sorry to say that many small town newspapers have donated news space and some have even promised editorial support in return for a sop of advertising, but the country weeklies and the small town dailies have become educated very rapidly on the ill effects of propaganda on the community and the reform of the last of the brigands of the business is not far off, for they are failing because of their panhandling and are being consolidated into clean newspaper successes with real editors to make them profitable.

Swat the demagogue among the politicians as well as in the press. You never finish paying tribute to a bribe taker. The professional yammerer against the utilities who comes to you for a handout will ruin you if you feed him. No bribery is justifiable and you cut the ground of honest fair dealing from under your feet when you buy politicians.

Don't buy your way. Tell your way, sell your way into decent public opinion.

The press of the country has been much interested in the testimony regarding the work of your public relations men taken by the Federal Trade Commission. Although a long time in the process of getting anywhere, it is still too early to comment on the findings of that body. It is still taking testimony. Eventually I presume your side of the case will have its day in court.

The evidence has disclosed that you have your misfits in the utility business just as we have in the newspaper business. . . .

A few of the committees dangled advertising bait before the noses of small papers whose editors were not eating regularly. One clever fellow actually served as an editorial writer while in the employ of a public utility. One editor was disclosed as guilty of accepting money from a utility for writing and circulating editorials with a ring of genuineness in them. Such a man deserves contempt from you and me. These isolated instances in a far flung activity I call to your attention because they are mutual reflections upon the intelligence of a part of the utility business and a part of the newspaper business.

The things developed before the commission that I think you should eliminate are the tampering with school texts, the employing of lecturers without identifying the source of their support and the circulation of any kind of literature that does not tell on its face and definitely, that it is sponsored by you for a specific purpose.

Granting that much of socialism and government ownership has crept into school texts in the past, you should not counter by seeking to supplant the one argument with your exploitation. Granting that only one or two school pamphlets in all of the mass from the 48 states investigated were complained of. Even one is too many. School texts should not be prepared by the proponents of any theory. They should be without bias. The public will distrust any other theory or practice and the seeds of your destruction are in any effort to continue or develop such a propaganda. Tell your side of the story, but don't be afraid to identify it. . . .

"BUSY FURNISHING INFORMATION"

In several miles of testimony I found that a majority of the public relations men testi-

fying were busy furnishing information, facts and contacting the public through the press, through public meetings, through the education of employers and investors in an ethical and above board manner."

Here Mr. Harrison introduced a number of quotations from several other members of the American Society of Newspaper Editors. Space does not permit publication of these quotations, but in them a considerable range of opinion is exhibited—some wholly condemning utilities for methods used in getting their story to the public, yet defending the right of any interest to use legitimate means to carry its side of a debatable question to the public; others as frankly condemning the Federal Trade Commission investigation, yet cautioning the utilities to carefully scrutinize all publicity methods employed. Mr. Harrison concludes with these paragraphs:

HONESTY WILL WIN

"Gentlemen, this is trite, I know, but honesty in big business, as well as small, is the best policy. Play all your cards on the table and you will win in the long run. The American public is fair. Give light, give facts and the people will find their own way. Fair regulation will follow a fair attitude on the part of the public, which will come as a natural sequence to fair dealing and the lowest rates you can afford and make a fair profit. You need billions of new capital yearly to continue your development. All investment is based on confidence. See that you do nothing to damage your good will and everything to enhance it—for with that you live or die.

"Abraham Lincoln said it all in this language: 'Public sentiment is everything. With public sentiment nothing can fail. Without it, nothing can succeed. Consequently he who moulds public sentiment goes deeper than he who enacts statutes or pronounces decisions. He makes statutes and decisions possible or impossible to execute.'"

NATURAL GASOLINE PLANT FOR ODESSA, TEXAS

Construction of a large casing head gasoline plant in Odessa, Texas, by the Phillips Petroleum Company, will include, beside the plant and equipment, a two-story office building which will become the west Texas headquarters for the company. The plant will handle between 50 and 75 million cubic feet of gas daily, with an output of 30 to 50 thousand gallons of natural gasoline.

JAMES T. LYNN DIES AFTER LONG SERVICE IN INDUSTRY

James T. Lynn, at various times president of the American Gas Institute, the Western Gas Association and the Natural Gas Association of America, died recently at the age of 72. Mr. Lynn attended the recent convention of the Natural Gas Department at Dallas, Texas, and was apparently in good health at that time. Heart disease was named as the cause of his death.

TUCSON GAS CONNECTIONS SHOW INCREASE

Gas connections to residences in Tucson, Arizona, totaled 388 during the month of September, 1928, showing a marked gain over the corresponding month of last year.

STRONG, ARK., RECEIVES NATURAL GAS FROM LOUISIANA FIELD

A four-inch gas line is in process of construction from the Farmerville field in Union Parish, Louisiana, to Strong, Arkansas, a distance of nine miles.

P. G. *and* E. Training Salesmen *for* Year-'round Activity

By Elliott Taylor
San Francisco Manager, Western Gas

A GOOD man is hard to find, and the Pacific Gas and Electric Company, recognizing this truism, is making certain fundamental changes in its organization chart and its sales activities, in the interest of keeping good men on the payroll all the year round.

Under the original creative selling plan which this organization launched early in 1928 there were certain departments, ie: house heating; radiant type heaters; water heater and gas range. Each functioned independently of the other, and the result was that when the time arrived for a sales campaign in one department, it became necessary to hire an adequate number of salesmen to handle the work. Recruited from many sources, many of them inexperienced in gas sales, the natural result was a high labor turnover.

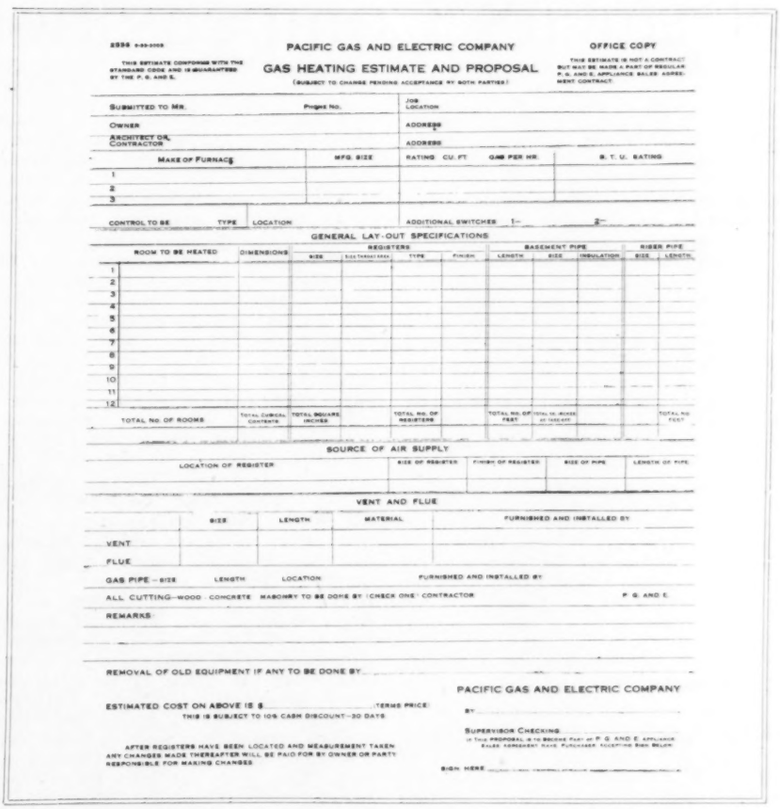
The recent water heater campaign, however, pointed the way to a new method in the efficient handling of crews. Under the stimulus of competition and the prospect of adequate financial remuneration, the men engaged in the sale of water heaters soon became valuable and well-informed gas appliance salesmen. Foreseeing their ultimate value to the company, the P. G. and E. established a school which all water heater salesmen attended. It met two, three or four nights a week in the various division offices, and was presided over by gas heating specialists from the divisions or from the home office of the company. The course included: (1.) The fundamentals of gas heating; (2.) Analysis of the consumers' needs, and recommendations to be made; (3.) The study of gas as a fuel.

Selling water heaters on a campaign that soon would close for the season, these men were nevertheless training themselves for the next step that they would take—the selling of house heating.

The next necessity for the sales department was to readapt the sales plan so that there would always be the assurance of some specific piece of sales work for the trained men to be utilized on. This was accomplished by combining the house heating, radiant type heaters, and water heater sales departments into one selling department for the entire system with the exception of San Francisco and the East Bay territory.

There are now 68 men selling house heating and radiant type heaters, with an authorization to the sales department to raise the total sales personnel to 122 as rapidly as sales expediency dictates.

The crews working from the different division offices are under the general leadership of their division sales managers, with a supervisor and estimator over every five men. Each salesman is provided with a block of forms, the "Gas Heating Estimate and proposal," upon which all of the details of the prospective job are entered by



PACIFIC GAS AND ELECTRIC COMPANY

OFFICE COPY

GAS HEATING ESTIMATE AND PROPOSAL

(SUBJECT TO CHANGE PENDING ACCEPTANCE BY BOTH PARTIES)

THIS ESTIMATE CONFORMS WITH THE STANDARD CODE AND IS GUARANTEED BY THE P. G. AND E.

THIS ESTIMATE IS NOT A CONTRACT BUT MAY BE MADE A PART OF REGULAR P. G. AND E. APPLIANCE SALES AGREEMENT CONTRACT.

SUBMITTED TO MR. Project No. JOB LOCATION

OWNER ADDRESS

ARCHITECT OR CONTRACTOR ADDRESS

MAKE OF FURNACE	MFG. SIZE	RATING CU. FT. GAS PER HR.	B. T. U. RATING
1			
2			
3			

CONTROL TO BE TYPE LOCATION ADDITIONAL SWITCHES 1— 2—

GENERAL LAY-OUT SPECIFICATIONS

ROOM TO BE HEATED	DIMENSIONS	REGISTERS SIZE	REGISTERS SQUARE INCHES	REGISTERS TYPE	REGISTERS FINISH	BASEMENT PIPE LENGTH	BASEMENT PIPE SIZE	BASEMENT PIPE INSULATION	RISER PIPE SIZE	RISER PIPE LENGTH
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
TOTAL NO. OF ROOMS		TOTAL CUBICAL CONTENTS	TOTAL SQUARE INCHES	TOTAL NO. OF REGISTERS		TOTAL NO. OF FEET	TOTAL IN ACCESS OF FEET			TOTAL NO. FEET

SOURCE OF AIR SUPPLY

LOCATION OF REGISTER	SIZE OF REGISTER	FINISH OF REGISTER	SIZE OF PIPE	LENGTH OF PIPE

VENT AND FLUE

	SIZE	LENGTH	MATERIAL	FURNISHED AND INSTALLED BY
VENT				
FLUE				

GAS PIPE — SIZE LENGTH LOCATION FURNISHED AND INSTALLED BY

ALL CUTTING—WOOD CONCRETE MASONRY TO BE DONE BY (CHECK ONE) CONTRACTOR P. G. AND E.

REMARKS

REMOVAL OF OLD EQUIPMENT IF ANY TO BE DONE BY

ESTIMATED COST ON ABOVE IS $ TERMS PRICE THIS IS SUBJECT TO 10% CASH DISCOUNT—30 DAYS

PACIFIC GAS AND ELECTRIC COMPANY

BY

SUPERVISOR CHECKING

IN THIS PROPOSAL IS TO BECOME PART OF P. G. AND E. APPLIANCE SALES AGREEMENT NOW PURCHASED, EXCEPTING ITEMS BELOW

AFTER REGISTERS HAVE BEEN LOCATED AND MEASUREMENT TAKEN ANY CHANGES MADE THEREAFTER WILL BE PAID FOR BY OWNER OR PARTY RESPONSIBLE FOR MAKING CHANGES

SIGN HERE

the solicitor. This is then turned in to the supervisor and estimator and he makes a complete proposal for the work to be done.

Jobs are not itemized, as it is believed that this confuses rather than assists the prospect in making up his mind. Estimates are made out in quadruplicate—one for the home office, on the back of which an itemized cost summary is carried; one each for salesman, workman and purchaser.

The general lineup of the campaign follows in many respects that of the water heater campaign. Sales are being made in all divisions, from September 1st to January 1st.

Special offers to consumers include $5 down and 18 months to pay on floor furnaces and radiant type heaters. Central warm air furnaces are sold for 10 per cent down, and 18 months to pay. Special allowances are being made on sales for replacement of old, obsolete or non-vented equipment or of equipment using other fuels than gas.

Bonuses are being paid employees for consumer prospects, turned in, at the rate of $2.50 for every one sold a central heating furnace, boiler or floor furnace and $1 for radiant type heater prospects.

Salesmen are compensated on the basis of $100 a month drawing account, chargeable against a straight 20 per cent commission on equipment (not including installation or incidental charges). Where allowances are made on old installations one-half of the allowance is deducted from the salesman's commission.

Because of the inequality of opportunity presented by the various divisions, all prizes are divisional prizes, and consist of a cash bonus of 1 per cent of the total sales of the entire division.

The publicity department is co-operating to the fullest extent with the sales department, through the use of newspaper publicity, envelope stuffers and displays in the headquarters throughout the territory.

COST SUMMARY

	Estimated	Actual
Appliance		
Appliance		
Setting		
Base Reg. Charge		
Registers		
W. A. Pipe		
Risers		
Vent		
Control		
Gas		
Air Return		
Cutting		
Air Cell		
Flue		
F. F. Connections		
Rad. "		
Excavating		
Cement		
Total		

Cost Summary used in connection with Gas Heating Estimate and Proposal

Salesmen's Compensation

(*Continued from Page 24*)

customers are charged against the salesman's gross profit for the month, as well as all losses and depreciations in connection with returned appliances.

Paying a portion of the merchandise gross profit to the salesman improves his ability to overcome customers' objections, surmount obstacles, better his selling-technique and make of himself a better business man. We have observed that requests for larger allowances on old equipment taken in on exchange for new merchandise have almost disappeared. It is now common practice to give allowances for old appliances much less than the maximum permitted in the company's schedule, whereas, when these same men were on a straight merchandise commission, continual pressure was brought to bear upon department heads to O. K. larger trade-in allowances. Under a straight merchandise commission there is a tendency on the part of most salesmen to feel that the merchandise they are handling is priced too high. Experience with the gross-profit commission has brought out the fact that the salesmen now urge the company to maintain proper selling prices, arguing that good salesmanship can overcome low-priced competition.

LOAD-BUILDING COMMISSIONS

We have been taught in our organization that the primary reason for the existence of a commercial department upon the payroll of a public utility company is the securing of a maximum and satisfactory volume of additional gross gas revenue of the best possible load characteristics at the minimum costs per dollar. The payment of revenue or load-building commissions based on the value of the equipment sold, from both revenue-building and load-factor standpoints, is most important. A careful analysis was therefore made of the revenue-producing value of each appliance or piece of equipment, as well as the load characteristics of its consumption. It was ascertained in the domestic field that the replacement of a manually-operated tank water heater with an automatic storage water heater occasioned an average yearly increased consumption of 29,000 cubic feet, the greater part of this consumption coming on the valley of the annual load curve. Analyses were made of the revenue value and load characteristics of the increased gas consumptions of many other appliances and gas usages, such as ranges, manually-operated water heaters, fireplace heaters, incinerators, laundry stoves, house heating installations, and various commercial and industrial equipment. Revenue or load-building commissions and percentages were then set up to automatically direct the efforts of the salesmen toward the desired objectives. The revenue commission as set up caused the selling of a much greater percentage of large-revenue-producing and off-peak-consumption equipment. The effort put forth by salesmen to install better revenue-producing equipment will be greater where the reward is larger. It is well to remember that the more desirable the business secured the more liberal the revenue commission should be.

DOWN-PAYMENT COMMISSION

We find from actual experience that salesmen soon learn that cash down-payments are obtained much more easily than they at first thought possible. Also they now realize that cancellations and returns are less apt to occur when some cash is collected in advance. Down-payments have increased by at least 100 per cent, and a surprisingly large number of sales have been made with full cash accompanying the order. No loss of business under this basis is apparent, three orders for complete apartment house equipment having been received in one month on which payment in full was made in advance.

GUARANTEED MINIMUM

A substantial drawing account enables the new man to get started with the assurance that his running expenses are taken care of, leaving his mind free to devote to his work. It also tides the salesman over in case of illness, as well as compensating him for any special duties, and for detail work such as explaining rates and adjusting high bills, notwithstanding that the total commissions earned are to be applied against his drawing account.

In making a summary of results accomplished with this plan of compensation, we find that the turnover of manpower is almost entirely eliminated, not one salesman having left of his own accord. The company's interests are his interests because the benefits are mutual. The paying of commissions on gross merchandise profits instead of upon gross merchandise sales has resulted in the development of a better business judgment which is quite noticeable.

The sales representative is interested in seeing that his clients receive every consideration, thereby preventing returns for which he might be penalized. The return of merchandise has been cut one-half, and misunderstandings with customers have almost entirely disappeared. The customers are undoubtedly getting better service. The tendency now is to sell to present customers rather than to depend too much on new ones.

In comparing the accomplishments of our domestic gas division during the first six months of 1928, under the plan here outlined with those of the corresponding period of 1927 under the former plan, we note the following:

The same 26 domestic gas representatives selling the same merchandise and the same manufactured gas at the same prices, and with an increase of only 1 per cent in number of customers, sold an increase of 19.2 per cent in appliances, reflecting an increase of 11.6 per cent in domestic gross gas revenue. They increased materially their personal compensations, and at the same time decreased the expense of the division by 11 per cent.

The sales of such extremely desirable revenue-producing domestic equipment as storage water heaters were increased by 57.3 per cent during this six-months period, notwithstanding that range sales were increased over the same period of 1927 by 29.8 per cent. In the house heating field during the same period, 609 manufactured gas installations were made, the revenue commissions automatically causing the house heating salesmen to solicit the largest revenue-producing installations first. In the in-

(*Continued on Page 52*)

How Denver Changed *to* Natural Gas

(*Continued from Page 22*)

turn-on in the district and the adjustment for natural gas by the service men. Emphasis was made that the change-over would be at no cost to domestic customers. Other advertisements advised the customer how to recognize the natural gas flame in the unadjusted burner and cautioned the customer not to turn the flame too high, not over one inch. Later advertisements called attention to individual instructions to customers which were to be mailed. The final general advertisement showed a map of the city divided into nine numbered districts, each numbered according to the sequence in which gas would be turned in. Three days prior to the turn-in of natural gas, cards of bright red color, containing instructions as to the procedure to follow before the service man called to adjust the appliances, were mailed to the customers in the individual district affected by the change-over. These cards gave the date of turn-on for the district. Coincident with the mailing of these cards, newspaper advertisements, containing a map of the district affected and repeating instructions regarding the use of natural gas, appeared in all the daily papers. This advertising, while informing the customer of the actual time of turn-on of the gas, had the effect also of getting and keeping all customers in a state of "natural gas mindedness" and eliminated considerable resistance to the speedy and general acceptance of the new fuel and its use. Radio broadcasting of the turn-on date and boundaries of each district was also used. And finally, some excellent human-interest stories were printed in the newspapers about the fires that had burned for 40 years and the men who had tended these fires.

DIVIDING THE FORCE

Each of the first eight districts was divided into 20 precincts. A lieutenant and 12 service men were assigned to each precinct and cared for all domestic adjustments therein. A two-wheeled street box was centrally located in each precinct and was used as a headquarters for that particular area. Each lieutenant had a phone located in his precinct where calls from the company headquarters would reach him. The lieutenants routed out their men, each man covering an entire block. In order that the lieutenant would know in which house the service man was working, arrangements were made as to certain signs to be used. One lieutenant gave each of his men a yard of red cloth, which was tied to the door knob or otherwise prominently located on the house as the man entered. Another had tin signs with the man's number, to be stuck in the lawn or hung on the back screen. One had his men hang their hats on the door knob or fasten them to the screen with a wire hook. Others used a chalk cross on the curb or sidewalk indicating the house in which they were working, drawing a circle about the cross when they had finished. We would not advise the last method, as too many humorous situations arose as a result. In some neighborhoods the people thought a raid by the K. K. K.'s was being made. In a fashionable portion of the city the police were called, the residents thinking the marks were made by a band of daylight bandits.

In addition to this precinct arrangement, it was agreed that as soon as one lieutenant finished his district he would go to the help of another who was delayed.

A few days previous to the turn-on of natural gas in a district, bleed risers were installed on the remote ends of the distribution system. These risers when lighted greatly facilitated the purging of the old gas from the system. Previous to lighting the bleeds, the fire department officials were notified as to the location of the bleeds and the time they would be lighted. Notwithstanding these notifications, on one occasion more than half of the fire companies responded to what was supposedly a serious fire in the heart of the packing district and which proved to be only an innocent gas man and his helper watching a burning bleeder.

June 23, 1928, found us like a well-trained army ready for the battle. Our outposts had been placed, the barrage was laid down and we were all on our toes waiting for the zero hour.

The feeder mains to the governor stations had been purged and tested on June 21. On the afternoon of June 21, the official opening of the town border valves was made. This was an official civic ceremony participated in by the city fathers and company officials.

THE ZERO HOUR

Nine p. m., June 23 was the zero hour. At this time the manufactured gas valves supplying District No. 1 were closed and the natural gas valves opened. Coincident with the turn-on the bleeders were lighted. In about an hour the first traces of natural gas were showing in the bleeder flames. Another hour was required to eliminate the slugs of old gas in the main arteries of the system. Hospitals, public institutions, newspapers, bakeries, restaurants and industrial plants using gas on a 24-hour load were converted that night. On Sunday, June 24, apartment house appliances were converted. Arrangements had previously been made with the janitors to admit our men to apartments where occupants were out of the city. Monday morning the domestic change-over proceeded on regular schedule at the rate of 2,500 to 3,000 customers per day.

Successive districts were changed from manufactured to natural gas as soon as the preceding districts were changed over. Thus, on August 4, the last district was completed—40 days of actual work being required for the job.

Special jobs, such as restaurants, hospitals, etc., were handled by a special flying squadron. To prevent duplication of work, the block groups for the regular domestic change-over work had a red slip with the address and notation "Skip this address" placed in order in the orifice envelope group. The special crew had the order on this work, which was speedily executed as soon as natural gas appeared at the appliance. It was deemed advisable to use the red slips in the routine domestic groups in order to eliminate the possibility of a skip.

As each customer's appliances were converted, a meter reading was taken. Note was made of the meter number as well as the reading on the meter slips. The meter numbers were checked against the meter cabinet as a further precaution against skips. These slips were sent daily to the customers' bookkeeping department so that billings could be accurately made, finishing the old manufactured gas billing and entering the first index reading on the new natural gas.

We have mentioned that all new orifices were ordered drilled with a No. 60 drill. Thus, when these orifices were installed by the service man, it was a comparatively easy job to ream the orifice to the size necessary for the correct natural gas flame. In some cases, we encountered appliances with solid or permanent orifices. In these cases, the customer was required to sign a slip releasing the company from any damage to appliance as a result of the work necessary to convert the appliance to natural gas before any adjusting work was done.

Range ovens with thermostatic control were given a quick adjustment by the domestic adjusters, and a special man called later to make the necessary changes on the by-pass or low-flame adjustment. Central house-heating appliances were adjusted by special crews during the period following the close of the change-over work.

HANDLING COMPLAINTS

Previous to the start of the change-over program we realized that no matter how smoothly our change-over work progressed that we would have more than the normal amount of complaints. Arrangements were therefore made to augment our existing switchboard equipment by the installation of several trunk lines. All complaint calls were routed to the investigation department where an enlarged force answered the calls. As many complaints as possible were handled over the phone, the majority being registered by customers in districts where the new gas had been turned on and whose appliances had not been adjusted. Complaints that could not be answered by phone were referred to the fitting shop and assigned to the regular troublemen when the call originated in the districts in which the change-over crews were not working. In case the complaint originated in the district in which the change-over crews were working, the complaint was handled by the precinct lieutenant in charge of the precinct in which the complaint originated.

During the change-over period, complaints executed increased 86.2 per cent over the same period the preceding year. Complaints per meter increased 84.1 per cent over the corresponding period the preceding year. Of the complaints handled during the change-over period 53.7 per cent were appliance complaints largely from people not home at the time the service man called to convert the appliances. Service men called at "not home" addresses three times before the attempt was abandoned. Complaints for readjustments totalled 13.3 per cent; 5.0 per cent of the complaints were of the "not home after 3 calls" variety; 4.0 per cent were duplicate complaint orders; 3.9 per cent "no trouble" orders.

The smoothness and rapidity with which the change-over program proceeded to a successful conclusion was far beyond the hopes of the operating department. We had the utmost faith in our plans and in those to whom the execution of the plans was given, but even with this there was the unknown quantity—customer cooperation. Luckily, we had wonderful customer cooperation and the result has been recorded herein.

Rex-Patrol Tank Heater

WITH distinct pride and satisfaction we announce the introduction of the New Rex-Patrol Tank Heater—a new water heater that is a real tribute to the ideals, traditions and accomplishments of The Cleveland Heater Co.

This new Rex-Patrol Water Heater is revolutionary as well as evolutionary in principle. It is an automatic or self-action tank water heater that may be attached to any range boiler. Thermostatic control and gas safety pilot are a part of the water heater—there are no accessories required to make this water heater entirely automatic.

The Rex-Patrol Tank Heater, of course, is approved by the Testing Laboratory of the American Gas Association and carries the Blue Star Seal. Last but not least, Rex-Patrol Tank Heaters sell at the price within reach of everyone. Nor is that all—let us send you the *whole* story.

The Cleveland Heater Co.

1900 W. 112th St. Cleveland, Ohio

California Oxide

Removes Hydrogen Sulphide from Gas at Low Cost

A highly potent Commercial Compound developed after years of research and tests conducted by Los Angeles' foremost chemist.

—Used extensively by gas companies for removing Hydrogen Sulphide from gas, at low cost, with highly efficient results.

California Oxide Co.

308 East Eighth Street

Los Angeles

Phone: TRinity 0769

MOODY SEAGRAVES MAY LAY 20-INCH LINE TO WASKOM, TEX.

According to press releases the Moody Seagraves interests of Houston will lay a 20-inch pipe line from Alto in the Richland Parish, La., field to Waskom, Texas, a distance of 130 miles. The line will connect at Waskom with a gas line supplying South Texas.

It is also reported that the same interests have purchased a half interest in the gas rights in the new gas field at Aqua Dulce, Neuces County, Texas. It is understood that this field, which is 25 miles from their main line to San Antonio and the Houston-Gulf line to Houston, will be held as a reserve supply.

LOWER RATES TO TAKE EFFECT IN ATCHISON, KANSAS

New low rates to become effective immediately, were announced to gas consumers in Atchison, Kansas, late in September by the Kansas Power and Light Company. The new rates are: First 500 cubic feet, or less, $1. Next 2,500 cubic feet, 10 cents per 100 cubic feet. Next 7,000 cubic feet, 6 cents per 100 cubic feet. Excess over 10,000 cubic feet, 5 cents per hundred cubic feet.

LOWER GAS RATES ASKED FOR BOONVILLE, MO.

Missouri Power & Light Company of Boonville, Missouri, has presented a proposal to the Chamber of Commerce to lower the present gas rates in that city from $2.15 per thousand cubic feet to $2.00 per thousand. At the same time the minimum rate per customer will be raised from 75 cents to $1.00.

TUCSON HOME SERVICE DIRECTOR VISITS ANNUAL FOOD SHOW

Mrs. Jean Roberts, home service director for the Tucson Gas, Electric Light & Power Company, attended the home service demonstrations of the Pacific Gas and Electric Company of San Francisco during the Annual Food and Home Appliance Show held there late in October.

R. M. SCHMIDT CELEBRATES 30TH YEAR WITH NEW ORLEANS CO.

R. M. Schmidt celebrated his thirtieth year with the New Orleans Public Service, Inc. Starting as a meter filler he worked through every department in the meter shop, later working as a salesman in the Jobbing Department, and now is in charge of the gas department of the company.

MAX POOLER OF TUCSON GAS CO. IS PRESIDENT OF ENGINEERS CLUB

Max Pooler, vice-president and general manager of the Tucson Gas, Electric Light & Power Company, was installed as president of the Tucson Engineers Club in October.

GAS WATER HEATERS FEATURED IN SALES CAMPAIGN

A campaign was carried on in Tucson, Arizona, during September and October in which gas storage water heaters were installed free of charge by the Tucson Gas, Electric Light & Power Company.

T. SHIMURA, MANCHURIAN GAS EXECUTIVE, VISITS L. A.

T. Shimura, manager of the South Manchuria Gas Company, Ltd., with headquarters in Dairen, China, was a visitor at the publication offices of *Western Gas* in Los Angeles early in October.

D. W. HARRIS—NEW VICE-PRES. OF ARKANSAS NATURAL

AS ANNOUNCED in *Western Gas* for October, 1928, D. W. Harris, formerly treasurer of the Empire Gas & Fuel Company has accepted the post of vice-president and general manager of the Arkansas Natural Gas Corporation with headquarters at Shreveport, Lousiana.

The Arkansas Natural's new manager has been identified with the Doherty organization for the past 16 years. Mr. Harris, who is a son of ex-governor, Nat. M. Harris of Georgia, was born at Macon, and was graduated in 1912 from Georgia School of Technology, receiving the degree of electrical engineer. He joined the Engineering Training School of the Doherty Company at Denver immediately upon his graduation and was located at Denver until 1913, when he went to the general office of the Company in New York. He spent 10 years in the New York office, advancing to the position of director of the budget and assistant treasurer of Cities Service Company.

D. W. Harris

He went to the Empire Gas & Fuel Company, Bartesville, Oklahoma, the principal gas and oil subsidary of the Cities Service Company, as treasurer, early in 1923. Later he became vice-president of the Indian Territory Illuminating Oil Company.

During his five years connection with the Empire Companies he has been active in civic affairs, having served as president of the Bartlesville, Oklahoma Chamber of Commerce. He is an active Rotarian, a member of the executive board of the First National Bank of Bartlesville, and the Y.M.C.A. and Boy Scouts directorate. He is an enthusiastic golfer and sportsman.

"GAS THE CAREFREE FUEL" IS FEATURED IN NEW BOOKLET

"Gas the Carefree Fuel" is featured in a pamphlet by that name, published by the Illinois Power and Light Corporation, East St. Louis, Missouri. The booklet gives 34 reasons for heating with gas, and shows estimated and actual costs of gas house-heating for the various types of homes pictured. An interesting fact noted is that in nearly every case the actual cost was slightly less than the estimated.

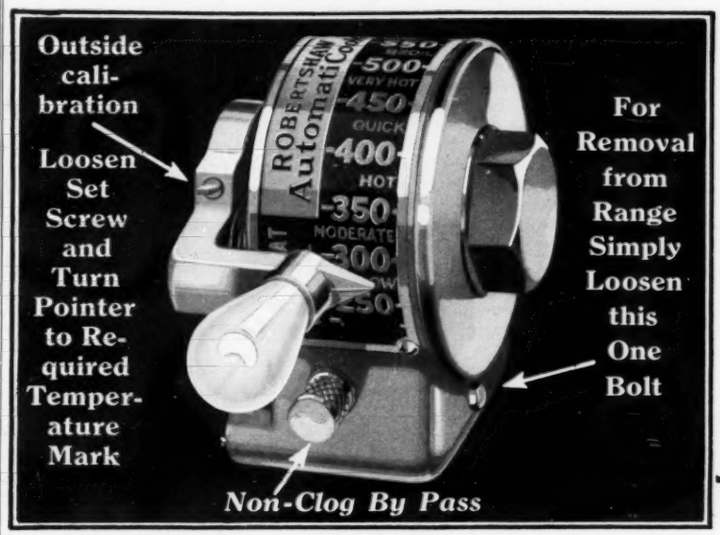
GAS APPLIANCE SOCIETY HOLDS EXHIBIT AT S. F. SHOW

During the Annual Food and Home Appliance Show, held in the Civic Auditorium in San Francisco late in October, the San Francisco chapter of the Gas Appliance Society of California maintained a booth featuring a general educational exhibit on house heating. The advertising was designed to be purely institutional in its nature, as no names were used and no selling was conducted.

E. V. DAILY IS APPOINTED NO. CALIF. MANAGER FOR J. B. CLOW

E. V. Daily, formerly associated with the Southern California office of the J. B. Clow Company, has recently been appointed northern California manager for the company, with offices at 571 Mission Street, San Francisco.

GAS COMPANIES and STOVE DEALERS



Appreciate the Exclusive Advantages of the "B" Type

ROBERTSHAW AutomatiCook

TRADE MARK

Outside Calibration. Takes just a few seconds to change the temperature setting if required, by means of a convenient set-screw on the temperature pointer. Merely loosen the set-screw, move the pointer to the proper temperature mark on the dial, and then tighten the set-screw.

Quick Removal. Should the "B" Type AutomatiCook become damaged for any reason, necessitating replacement, it can be removed without disconnecting the range or disturbing the linings or the piping. Requires no mechanical servicing or repairs on the job. Simply loosen one bolt, replace the Thermostat with a spare and tighten the bolt. The job can be done in less than a minute's time.

Non Clog By-Pass Pilot. Will not clog nor bind. Always moves freely and maintains its adjustment. Eliminates servicing, adjusted by turning either to the right or left.

Non-Corrosive Valve Seat. The AutomatiCook is now being equipped with a Raised Non-Corrosive Valve Seat which will resist the corrosive action of gas, eliminating any possible trouble from this source.

Write for 8-Page Folder, illustrating and describing the above advantageous features.

ROBERTSHAW THERMOSTAT CO.

Youngwood, Penna.

The Robertshaw AutomatiCook is now used on more than 80 leading makes of Gas Ranges

GAS or WATER Connections

whether screw thread or gasket, should be made up with KEY SPECIAL PIPE JOINT COMPOUND.

KEY SPECIAL PIPE JOINT COMPOUND is not a quick hardening cement, but a plastic lubricant and a filler that will seal the most obstinate joint with ease. It covers more surface than an equal volume of red or white lead, thereby reducing the cost. It is waterproof—and there is no waste.

Manufactured by

E. A. Key Co., Inc.

1431 Santa Fe Ave.
Los Angeles, Calif.

Distributors in all principal cities.

WRITE FOR FREE SAMPLE

NATURAL GAS GASOLINE OPERATIONS

Compiled by E. T. Knudsen

Department of Commerce, Bureau of Mines, Division of Mineral Resources and Statistics

ONE hundred and thirty-four natural gasoline plants with a daily indicated capacity of 1,616,800 thousand cubic feet, report a recovery of 46,163,455 gallons of natural gasoline from 32,784,808 thousand cubic feet of gas treated in September. This is a decrease of 784 barrels in daily average production.

Utilization of natural gasoline amounted to 968,768 barrels, a decrease under August of 180,856 barrels. Daily average utilization of 32,292 barrels was 4,346 barrels less than daily average production of 36,638 barrels.

Stocks of natural gasoline at the end of September amounted to 1,340,252 barrels of which 31,028 barrels were reported by natural gasoline plant operators and 1,309,224 barrels by refinery operators. This is an increase of 130,362 barrels over August stocks. This stock figure of 1,340,252 barrels is approximately forty-one and one-half days supply at the current rate of consumption.

Production of gasoline during the month of September amounted to 5,508,585 barrels, a daily average of 183,620 barrels. This is a decrease in total production of 366,046 barrels or 6.23 per cent under August output, and an increase of 365,872 barrels or 7.11 per cent over the output of September 1927.

Of the total gasoline produced 26,069 barrels were reported as finished gasoline produced by natural gasoline plant operators. Production of gasoline from cracking processes decreased in September to 445,002 barrels.

Stocks of gasoline show a decrease of 396,931 barrels during September and at the end of the month amounted to 9,005,655 barrels.

CALIFORNIA NATURAL GASOLINE PRODUCTION, DISTRIBUTION AND STOCKS
SEPTEMBER, 1928

Production by Fields

Field	Gas Treated M Cu. Ft.	Natural Gasoline Produced (Gallons)
Fullerton	615,690	1,539,127
Midway	3,171,557	4,763,234
Huntington Beach	1,703,637	3,975,276
Long Beach	11,323,583	17,552,909
Richfield	1,137,131	1,504,035
Santa Fe Springs	1,024,111	2,837,811
Seal Beach	1,322,811	2,257,146
Ventura Avenue	7,669,491	4,821,787
All Other Fields	4,816,797	6,912,130
Totals	32,784,808	46,163,455

Production

Type of Plant	Gas Treated M. C. F.	Natural Gasoline Produced (Gallons)	Gasoline Recovery per MCF Gas Treated
Oil Absorption	23,865,208	30,862,936	1.293
Compressor	253,314	273,056	1.078
Combination Comp. and Oil Absorption	8,666,286	15,027,463	1.734
Totals	32,784,808	46,163,455	1.408

Finished Gasoline produced at plants 26,069 Bbls.

Distribution

Stocks First of Month		1,209,890 Bbl.
Production during Month		1,099,130 "
Quantity Mixed with crude or unfinished oils	127,773 Bbl.	
Used in Blending at Refineries	832,672 "	
Stocks End of Month	1,340,252 "	
Used at Plants, Shortage and Evaporation Losses	8,323 "	
	2,309,020 "	2,309,020 "

Stocks

Natural Gasoline held by Natural Gasoline Plant Operators	1,303,195	Gals. or	31,028	Bbls.
Natural Gasoline held by Refiners	54,987,408	" "	1,309,224	"
Totals	56,290,603	" "	1,340,252	"

JOHANNESBURG, SOUTH AFRICA TO HAVE GAS PLANT

The Provincial Council of the Union of South Africa has in hand a project for the construction of a gas plant at Johannesburg, which will cost about £300,000. Industrial townships are being laid out, and attractive facilities in the matter of transport for the establishment of new industries are being offered.

BRITISH COLUMBIA GAS WORKS BAND A SUCCESS

Under the leadership of Bandmaster A. W. Jordan, the Gas Works Band, organized by employees of the British Columbia Electric Railway Company at Vancouver, British Columbia, recently visited one of the electric power plants of the company at Lake Buntzen. The band, since its organization, has participated in many public concerts and other musical events in Vancouver.

Conservation *of* Natural Gas *in* California

(*Continued from Page 32*)

seem that the problem, as originally conceived, had been successfully met. The early calculations of a maximum of 160 million cubic feet of surplus were upset by the bringing in of an unusual number of heavy oil and gas producing wells during the first half of the year.

This unexpected leap in production resulted in an increase of surplus gas, on September 1, to approximately 170,000,000 cubic feet. It should be pointed out here that the injection projects were slow in getting started, owing chiefly to the fact that the necessary compressor facilities were not immediately available. Progress in this direction was most marked during August, in which month the quantity of gas injected increased from 30 million to 54 million cubic feet. The natural decline of gas production that may be expected at Long Beach together with the near approach of the period of greater seasonal demand for gas, should operate to reduce the surplus materially.

SITUATION AT SANTA FE SPRINGS

In the latter part of August, 1928, there were about 172 wells drilling, or preparing to drill, to the newly discovered deep Buckbee sand at Santa Fe Springs. Anticipating a great volume of gas when production starts, the operators concerned are now formulating a plan which, if successful, will be the most forward-looking conservation project yet attempted in the California program. It is proposed to use part of the gas that will issue from the Buckbee sand, which under ordinary conditions would be blown into the air as waste, to repressure the overlying Meyer sand. The plan aims to accomplish the following things: First, to conserve the waste gas from the Buckbee zone by storing it in the Meyer zone and ultimately recover approximately 80 per cent of it for commercial use; Second, to increase the recovery of gasoline from the gas after it issues from the Meyer sand; Third, to increase by several million barrels the ultimate recovery of oil from the Meyer sand; and Fourth, to decrease the cost per barrel of production from the Meyer sand.

BENEFITS OF THE WORK

While the work of gas conservation in California is far from completed, it is plainly evident at this time that the movement is one of first importance to the oil and gas industry of the State. The outstanding benefits apparent at this time include: (1) Reduction of gas wastage and conservation of both oil and gas for future production; (2) Material increase in the quantities of oil and gas that will ultimately be secured from the oil measures of the state; (3) Decrease in operating costs by the conversion of pumpers into flowing wells through repressuring methods; and (4) Stabilization of the supply of gas for commercial uses, making it possible for public utility gas corporations, on account of storage during periods of minimum demand, to equalize their seasonal commitments for gas purchases.

Finally, these tangible results constitute the best kind of recommendation for the solution of problems of this nature right in the state where they originate. California's oil industry has taken a momentous step in the important matter of cooperation between state and industry.

Empire Oil Meters

Positive Displacement Oscillating Piston Type

Simple in construction, with low cost of maintenance.
Accurate and reliable.
Specially adapted for Cracking and Absorption Processes.
For Gas Companies — Refiners and Distributors of Gasoline and all distillates of petroleum.
For measurement of Crude oils, cold or hot.
Sizes for ½" to 6" pipes.
Standard stock meters for working pressures up to 150 lbs.
Special High Pressure Meters according to specifications up to 600 lbs. working pressure.
Made either with large Vertical Dials or Horizontal Registers.

National Meter Company

San Francisco 1048 Folsom Street — 299 Broadway—New York — Los Angeles 643-645 Santa Fe Ave.

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HEATING--DOMESTIC
and
INDUSTRIAL
GAS APPLIANCES

C. B. Babcock Company

135 Bluxome Street, San Francisco — 2132 Atlantic Street, Los Angeles

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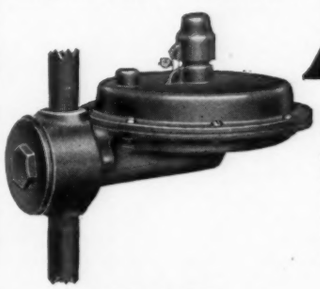
With or Without Mercury Seal



Spring Type
Also furnished in Dead Weight Type

Reynolds Gas Control Since 1892

Products for all kinds of Pressure Reduction—for either artificial or natural gas.

GOVERNORS — Intermediate Pressure, Triple Outlet, Holder, Toggle Type Street.

REGULATORS—High Pressure Service, Low Pressure Service, High Pressure Line, Single and Double District Station.

VALVE—Automatic Quick Closing Anti Vacuum.

REYNOLDS GAS REGULATOR COMPANY
Anderson, Indiana

Stockton Fire Brick Company

FIRE BRICK, INSULATING BRICK
HIGH TEMPERATURE CEMENT

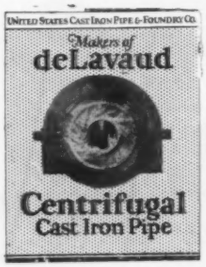
High Grade Refractories
for

GENERATOR LININGS
CHECKERS
BOILER SETTINGS

OFFICE:
Russ Building,
San Francisco

WORKS:
Stockton,
California

Cast Iron Pipe and Fittings



for All Purposes

High and low pressure pipe for Gas Service

United States Cast Iron Pipe and Foundry Company

Sales Offices
San Francisco, Pittsburgh, Dallas, Kansas City, Cleveland, Philadelphia, Chicago, Birmingham, New York, Buffalo, Minneapolis

General Offices:
Burlington, New Jersey

FEDERAL TRADE COMMISSION ISSUES QUESTIONNAIRE

Following its inquiry into publicity methods of the public utility industry, the Federal Trade Commission has made public the first 48 pages of a 210-page quesitonnaire to be sent to all public utility holding companies and management groups in accordance with Senate Resolution No. 83 of the Seventieth Congress. The questionnaire deals with the financial condition of the holding companies, methods of issuing securities, intercompany relationships among holdings, management and service companies, services furnished by such companies and political campaign expenditure or funds used to influence public opinion.

FORT LEAVENWORTH, KANSAS, IS NOW ON DISTRIBUTION LINE

Cities Service Gas Company on October 1 turned gas into the Fort Leavenworth distribution system which connects with the gas company's new 12-inch line leading to St. Joseph at a point north of Leavenworth, Kansas. The distribution plant was constructed by the United States Government to serve the military reservation at that point.

The section of the new St. Joseph line in Kansas, which serves the Fort, has been completed and with the granting of a certificate of convenience and necessity by the Missouri commission last week, arrangements are being made to start the construction of the Missouri portion of this line at once.

Cleanliness: Multiplier *of* Hot Water Sales

(*Continued from Page 31*)

will become almost incidental. The whole question is, how badly do they desire cleanliness? How important to them is this simple virtue? Do they want cleanliness and the joy of the hot bath at home more than they want that automoble ride?

How shall we sell the urge to cleanliness? How else but in terms of the objects of life most dearly prized? People want "to keep up with the Joneses"—but who can be socially acceptable today if personally he has not enjoyed his daily bath and changed his soiled and dirty linen? People want health—but what contributes more to health than rigid standards of cleanliness? People want beauty and attractiveness—but what is more beautiful than cleanliness, order, neatness? People want success—but who can succeed in business or social life today if his standards of home and personal cleanliness are not high?

Our movement, then, seeks to show the importance of cleanliness in achieving the goals for which the masses of people strive. Cleanliness means beauty, comfort, health, enjoyment, better social standing, greater success in business. In our advertising, our publicity, our educational work, you do not find this movement emphasizing soap. You find us selling ideals, and even cleanliness itself we seek to set forth in all the varied physical, social, and even spiritual values that are tied up with it.

Cleanliness is not a selfish appeal—it is in the public interest and for the public good. Every thinking person knows cleanliness is desirable. Back of a cleanliness appeal are many important forces—health movements, educational forces, the press, the pulpit, and all the organizations that are working for better standards of living. With these forces, our public service cleanliness movement cooperates in many ways as no narrowly commercial campaign to sell soap or gas or bath tubs could possibly do.

This, then, is our platform—cleanliness, interpreted in the broadest possible terms as a movement for the good of homes and people everywhere.

Secondly, our specific program, based on this broad platform, is five-fold:

(1) *Advertising.* A cooperative campaign in magazines and newspapers aimed at mass circulation. Nearly one million dollars these first two years will be expended by us in paid space to tell this new cleanliness and soap-and-water story.

(2) *Publicity.* Through write-ups by syndicate writers on home problems, the baby, the children, health, etc.; through editorials; through special features for women's page editors; and through other releases, sometimes our own, but more frequently based by newspaper writers themselves on our materials, we are receiving very widespread publication in newspapers all through the country, of articles that promote the cleanliness idea.

(3) *Educational work.* Cleanliness Institute is one of the most interesting movements in this particular field. It is supported by soap funds, but is absolutely noncommercial in its outlook. It must be as high grade in the cleanliness field as the Rockefeller Foundation is in its field. It must approach cleanliness education as a public service. Our school department publishes the kind of material the teacher is anxious

to get, which is interesting to the children and which will not only interest them in cleanliness in a new way but will help the teacher to establish in the children cleanliness habits for life. All our work with health organizations, social service groups, etc., is on a plane of genuine public service. I cannot emphasize too strongly that Cleanliness Institute is a non-commercial, public service organization, and that in this fact lies its usefulness and its strength. Our staff is made up of well-known professional people and educators who are working on a fundamental appeal which, while it is important to your industry and to mine, and therefore justifies generous support, is, more fundamentally, in the public interest and for the good of individuals and communities.

(4) *Research.* Time does not permit describing our research effort, except to say that for our educational and publicity work, library and investigative research of course is necessary to bring together the facts and literature required, and that this has been initiated and goes forward simultaneously with the rest of our program.

(5) *Development of cooperative effort with other industries.* Cleanliness touches a tremendous number of other industries whose products directly relate to the promotion of cleanliness. That is why we are placing our work before the gas industry. That is why we are working also with the plumbing industry, the towel manufacturers and linen supply companies, and the makers of brushes, brooms, and mops, as well as a score of other business groups whose interests touch vitally this subject of cleanliness. Surely we can all work together in a spirit of cooperation and public service to help make homes and people cleaner and better. This is both a public service and good business.

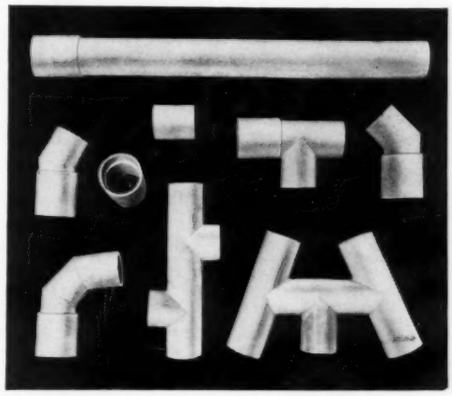
Third and last. How can we work together in a concrete way on this particular thing? First, as to our advertising copy—if it is of use to you, you are free to use it within certain limitations. We desire only that it be used for a broad general appeal, and would like to have our advertising agency approve from ths point of view any use that a gas company might make of it. Second, we can exchange ideas with you and your industry, which we are already doing. Third, we have prepared a good deal of material in the way of literature. You may be able to use some of this and you are welcome to it. We will gladly supply sets of our material to any gas company executive desiring to see them. In the fourth place, some of our material may be useful to your home service departments, especially for cooperation with public health officials, nurses, women's organizations, etc., in carrying forward educational work on the importance of hot water to health and efficiency in the home. And fifth, if you would like to be on our mailing list we shall be glad to have you.

This work of cleanliness education will not be accomplished over night. "Education" means "drawing out". It takes time, but if we work along these lines, and especially if we help each other, we are sure to accomplish results that will more than justify the time and money expended. Cleanliness Institute, whose address is 45 East 17th Street, New York, invites correspondence from you and interchange of ideas. It urges for your consideration the value and importance of the cleanliness appeal, and will gladly cooperate with all who are interested in working this out in a concrete and helpful way that will both serve the public and make business better for both you and us.

VITEX

Increases Draft

Improves Combustion



Absolutely Non-Corrosive

The Perfect Gas Vent and Flue Pipe

Samples, prices, and installation information gladly furnished on request

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High Grade Machinery

The Babcock & Wilcox water tube boilers
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W P & S

DESIGNERS, FABRICATORS & ERECTORS OF PRODUCTS OF STEEL

Investigate WESTERN Hi-Pressure Unit Gas Holders

WESTERN PIPE & STEEL COMPANY OF CALIFORNIA

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W P & S

A NEW JOHNSON INVENTION!

Here is another Johnson Gas Appliance which fills a real need. This new invention is really a combination of two new developments—(1) a new style urn burner and (2) a thermostatic heat control.

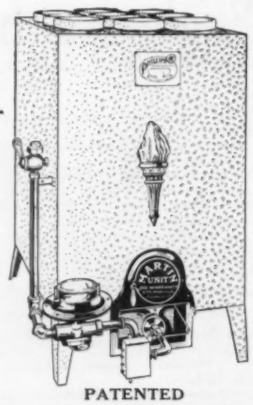
Restaurants and Cafeterias will welcome the advent of this great combination because it results in gas economy, better coffee, and foot maintained at proper degree of heat.

The burner may be easily mounted to replace any old style burner. The thermostatic heat control may be attached to any urn or steam table.

Full details of these interesting and valuable inventions are embodied in a printed folder. We shall be glad to send one to you on request.

JOHNSON GAS APPLIANCE CO.
Cedar Rapids IOWA

Pacific Coast Representative—C. B. Babcock Co.
135 Bluxome Street San Francisco, California



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Martin Unit Gas Furnaces

ARE THE RESULT OF 38 YEARS HEATING EXPERIENCE
MADE IN FOUR SIZES
Electric, Thermostat or Manual Control
Approved by A. G. A. Laboratory and by the City of Los Angeles
Write for your copy of "Modern Heating Methods"

PHILLIPS HEATING, VENTILATING & MFG. CO.
1710 W. Washington St.
Los Angeles, California

Live Agents Wanted

TESTING LABORATORY A.G.A. APPROVED

SOUTH CHESTER STEEL PIPE

Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

SOUTH CHESTER TUBE CO.
Chester, Pa.

Salesmen's Compensation

(Continued from Page 44)

dustrial and commercial fields also, the salesmen have developed much additional load of the most profitable character.

The accounting in connection with this method has not proven difficult. Commissions are not computed on each sale, but all items are merely listed in a commission ledger and the percentages are computed on the totals for each salesman at the end of each month.

In conclusion, we believe that this or some similar combination of load-building, gross-profit, and cash-collection commissions can be made to accomplish excellent gas sales results in any community.

WILLIAM REYNOLDS APPOINTED AD. MGR. OF SERVEL SALES, INC.

H. W. Foulds, vice-president Servel Sales, Inc., of New York, distributors for Electrolux gas operated and Servel electric refrigerators has announced the appointment of William Reynolds as advertising manager. Mr. Reynolds has been associated with the Servel organization since 1926 and succeeds J. M. Bickel who resigned to become sales manager of Holmes Products, Inc., New York City. Prior to joining Servel Mr. Reynolds was advertising manager for the New York and Queens Electric Light & Power Co., and at one time was a member of the sales department of the George Weiderman Electric Company.

During the war Mr. Reyonlds was assigned to the U. S. N. Radio Communication Service, having the rank of chief radio operator. Much of his time was spent aboard destroyers. He is one of the few men to have had the unusual experience of being attached to America's only "mystery ship" whose operations have recently become the subject for widely discussed magazine articles.

ST. LOUIS INDUSTRIAL GAS CO. ASKS FRANCHISE

Application has been made by the St. Louis Industrial Gas Company for a franchise to bring industrial gas to the city of St. Louis, Missouri. According to report the company is capitalized at $32,000,000 and has offered to post a bond of $250,000 guaranteeing that a natural gas pipe line from the Louisiana fields to St. Louis would be started within 180 days after a gas franchise is granted.

INCREASE IN EQUIPMENT SALE DURING CHANGE-OVER

During the change-over from manufactured to natural gas in New Orleans nearly three carloads of gas ranges were sold. Wm. Hirt, superintendent of the gas jobbing department, handled the work of installing the new equipment for the New Orleans Public Service, Inc.

L. A. G. AND E. HAS FRANCHISE RIGHTS AT MONTEBELLO

Los Angeles Gas and Electric Corporation has been granted a franchise by the state railroad commission for the distribution of gas in the City of Montebello, California.

MAGNOLIA GAS CO. TO SUPPLY LATEX, LA., WITH GAS

The Magnolia Gas Company is to construct a 10-inch gas line from the new gas field in De Soto Parish, Louisana to Latex, a distance of 25 miles, according to October report.

TEXAS-ENID LINE IS NEAR COMPLETION

The Wheeler County, Oklahoma 14-inch Texas-Enid gas pipeline of the Consolidated Gas Utilities Company is nearing completion is expected to be in operation by the first of November, according to Logan W. Cary, president of the company. The line will have a carrying capacity from 30,000,000 to 35,000,000 cu. ft. of natural gas and wll bring additional supply to many cities and towns in Oklahoma and Kansas now being served by the company. It also will bring gas for the first time to the towns of Weatherford, Thomas, Custer City, Watonga, Hitchcock, Southard, Okeene, Canton and Fairview.

The company, upon completion of the Wheeler County, Texas-Enid line, will supply natural gas at wholesale or retail to 51 towns or communities in western and northern Oklahoma and south central and southeastern Kansas, serving a territory with an estimated population of 400,000. In addition to the towns which soon will be hooked on to the lines and receive natural gas service for the first time, the company is now distributing natural gas on a retail basis to citizens of Fort Sill, Elgin, Sayre, Fletcher, Hominy, Cushing, Tonkawa, Blackwell, Braman and Garber in Oklahoma, and Nickerson, Sterling and Lyons in Kansas. It supplies gas wholesale at the city gates to Lawton, Marlow, Duncan, Comanche, Apache, Altus, Blair, Mangum, Granite, Willow, Carter, Erick, Elk City, Enid, Hunter, Pondcreek and Medford, all in Oklahoma, and to Caldwell, Kansas. The Larutan Gas Corporation, a subsidiary, has extensive industrial consumers in Wellington, Wichita and Hutchinson, Kansas. The Midwest Gas Corporation, another subsidiary, controls considerable holdings around Neodosha and Chanute, Kansas.

WICHITA-OTTAWA LINE TESTED BY U. S. BUREAU OF MINES

When crews completed the laying of the 20-inch extension from the Panhandle of Texas to Ottawa, Kansas, several weeks ago it gave the gas company a direct connection to Kansas City, a distance of approximately 425 miles. The line is being tested in accordance with the standard U. S. Bureau of Mines shut-in pressure drop test.

Construction is progressing on the installation of the third 16-inch pipeline between Ottawa and Kansas City, where it will tie into the present system at the Glavin station. About 50 per cent of this line has been laid and it is estimated the entire job will be completed early in November.

Work on the five-mile, 20-inch gas line from the Glavin regulating station into Kansas City is being pushed and about 70 per cent of this line has been laid to date.

Satisfactory progress is also being made on the construction of the Higgins, Texas, and the Corwin, Kansas, compressor stations and the installation of the new equipment at the Mooreland, Pampa and Petrolia stations of the Cities Service Gas Company.

P. G. AND E. CO. HAS PERMIT TO SELL PREFERRED STOCK

Pacific Gas and Electric Company has been authorized by the Railroad Commission of California to issue and sell 400,000 shares of its five and one-half per cent first preferred stock, par value $25.00 per share, of an aggregate value of $10,000,000 and to use the proceeds derived from the sale thereof to reimburse its treasury on account of money advanced for additions and betterments. The P. G. and E. has un-reimbursed capital expenditures, or construction expenditures yet to be made in its 1928 program, totalling $15,412,685.53.

GOOD YEAR

Dependability

COMPLETE satisfaction---even from tires as consistently good as Goodyear Tires---can only be measured by the dependability of the service that follows their sale.

Motor Tires, Inc. Service is always dependable. It begins with the important matter of correct recommendation---followed by a service that guards your tires in use---repairs them when necessary---protects them against avoidable wear.

We have the desire---the carefully trained men---the facilities---the dependability to serve you well.

Tune in on Our Musical Programs Over Radio K.F.O.N. Every Monday 8 to 9 P. M.

"A Tire for Every Need"

Motor Tires, Inc.

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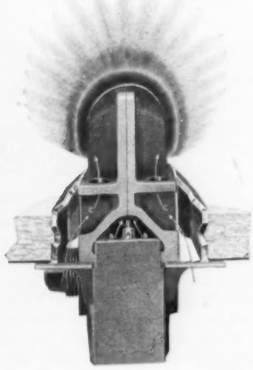
LOS ANGELES—1228 S. Grand—WEstmore 3554 and 5710
FORMERLY
Truck Tire Service Co.—Zinz & Clawson Service Co.

R.M.C.



The gas burner with a snappy, high temperature flame

Rotary Manufacturing Co.

5720 Long Beach Avenue
LOS ANGELES

TELL US YOUR MAINTENANCE AND FINISHING PROBLEMS. DURING THE PAST 47 YEARS . . . SOMEWHERE, AND AT SOME TIME . . . *ARCO* MAINTENANCE ENGINEERS HAVE HELPED UNRAVEL THE SAME KNOTS YOU ARE TRYING TO UNRAVEL AT THE PRESENT MOMENT. THIS SERVICE IS YOURS FOR THE ASKING. MAY WE NOT SEND YOU COMPLETE DETAILS . . . SOON?

THE ARCO COMPANY
CLEVELAND, OHIO

Pacific Coast Branch
116 New Montgomery St.
San Francisco, Calif.

Branches and Warehouses in Principal Cities

(199)

ARCO

Paints . Varnishes . Enamels . Lacquers

AMENDMENTS TO RULES ON GAS SERVICE IN OKLAHOMA

A hearing before the Oklahoma Cororation Commission was held early in September for consideration of two proposed amendments affecting rules and regulations in prescribed standard for gas service in Oklahoma. All utilities engaged in the business of conveying gas by pipe line and the production, transmission, delivery or furnishing of heat or light with the gas were asked to attend. The amendments to the rules as proposed by the Corporation Commission are:

"The substance of the first amendment will consist of changing the amount of the deposit from the average bill for one-sixth of one year, to an average bill of forty-five days, and providing that a minimum deposit of $5.00 may be permitted; that interest on such deposit shall be paid at the rate of 8 per cent instead of 5 per cent, and shall be credited upon the consumers' bills annually.

"The substance of the second amendment will change the present free extension limit, which is 75 ft. for all sizes of pipe, to a free extension of 75 ft. of 4 inch main, 100 ft of 3 inch main, 125 ft. of 2 inch main, as well as other provisions which it may be necessary to enact in connection with the extension of gas mains in the various towns and cities within the State of Oklahoma."

COAST COUNTIES G. & E. PLANS EXTENSIVE ADDITIONS

Coast Counties Gas and Electric Company, with headquarters in San Francisco, is contemplating several additions to the distribution equipment of the company. A new compressor plant is being added at Gilroy, California, and a high pressure line is being laid out to the I. O. O. F. Home on the outskirts of town and to the high school.

In the Twin Lakes section, near Santa Cruz, a high pressure line is now under construction, which will give service to that locality in the near future.

At Pittsburg, California, service is being extended to a newly developed section named for the late president of the P. G. and E., and Columbia Steel, Wiggington E. Creed. In the Creed Tract, 250 homes are planned for employees of the Columbia Steel and the Johns-Manville plant. The steel company, one of the Coast Counties Gas and Electric Company's industrial consumers, is now making additions which will total $4,000,000 when completed. These include open hearth furnaces and a new tin plate mill.

UTILIZATION OF NATURAL GAS STIMULATED IN MEXICO

Press reports from Mexico City indicate that Mexico is attempting to stimulate the utilization of natural gas in that country through offering premiums to the first Mexican company which will pipe natural gas from producing fields for consumption; through the granting of special franchises to factories using natural gas; and through granting tax exemption on all gasoline exported which is recovered from natural gas.

CITIES SERVICE COMPANY HOLDS CUSTOMER OWNERSHIP MEETINGS

The Gas Division of the Cities Service Company held the opening meeting of a series of customer ownership group meetings at Wichita, Kansas, on October 2 for pipe line and compressor men. J. H. Richardson, superintendent at the Wichita station, was in charge. A series of meetings covering the territory of the Cities Service Company was planned to be held over a period of several weeks.

SIMPLIFIED PRACTICE GAINS SUPPORT IN 1928

Simplified Practice, or the elimination of waste in industry through simplification, gained 1,705 supporters during the third quarter of 1928, according to Ray M. Hudson, assistant director of the Bureau of Standards, in charge of the commercial standards group. Mr. Hudson has just made public his report to the director of the Bureau of Standards, covering the work of the commercial standards group for the period ending September 30, 1928.

At the end of the second quarter of this years (June 30), there were 9,754 individual firms and 883 trade associations supporting simplified practice recommendations. At the end of the third quarter (September 30), there were 11,319 individuals and 1,023 trade associations. This endorsement is given in the form of a signed acceptance to each simplification project, by which the acceptor pledges his support to the program as developed by the industry.

COMPRESSOR PLANT UNDER WAY AT COLONY, KANSAS

The Oklahoma Natural Gas Corporation, with headquarters at Tulsa, Oklahoma, began construction early in September of a compressor plant at Colony, Kansas, which will be completed at an approximate cost of $50,000. Construction plans call for the erection of six buildings which include the main compressor station and auxiliary buildings. The compressor station will be a two-unit plant.

The Oklahoma Natural, according to press reports, has recently completed an eight-inch gas line from the Blue Mound district to Mildred, Kansas, and expects to lay a line from Colony, Kansas, to Mildred. An 8-inch line from Iola, Kansas, to the compressor station is also being laid.

FINANCE COMMITTEE CREATED BY STANDARD G. & E. CO.

An announcement from H. M. Byllesby & Company states that at the meeting of the board of directors of the Standard Gas and Electric Company, held September 20, a finance committee was created, to have supervision over all financial affairs of the company. Members of this committee are: B. W. Lynch, chairman; R. J. Graf, J. H. Briggs and M. A. Morrison, all of whom are serving in the capacity of vice-presidents of the company.

LLOYD A. LYND NAMED ASST. TREAS. OF EMPIRE COS.

Announcement is made by the Empire Companies of the election of Lloyd A. Lynd as assistant treasurer by the directors of the company. Mr. Lynd has been connected with the Empire Companies for about 10 years, serving in various capacities, including the federal income tax and insurance divisions.

C. C SHOEMAKER, JR., IS NOW WITH HAMMEL CORP.

C. C. Shoemaker, Jr., resigned his position as gas chemist with the Board of Public Utilities of Los Angeles on October 1st, to become associated with the Hammel Radiator Corporation at the firm's Los Angeles office.

SO. CALIF. GAS CO. ASKS FOR ELSINORE FRANCHISE

Southern California Gas Company has applied to the State Railroad Commission for permission to exercise franchise rights in the distribution and sale of gas in the city of Elsinore, Riverside county.

LONE STAR FOREMEN HOLD SEMI-ANNUAL MEETING

Lone Star Gas Company foremen held their fourth semi-annual meeting on October 5th at the Company's headquarters in Dallas, with A. W. Breeland, chief clerk of the pipeline operating department, in charge of the general sessions.

Those appearing on the program were Field Foster of the Hollis, Oklahoma, gasoline plant, who spoke on the subject, "What the Company Should Expect from Its Foremen"; Frank L. Chase, vice-president and operating manager of the Lone Star, next dealt with the subject, "What Foremen Should Expect from the Company." Marshall Newcomb of the legal department spoke on "Our Relations with Regulatory Bodies" and Byron L. Rodgers, superintendent of compressor stations, on general problems.

Other sessions were given over to special departmental meetings and question and answer discussions. Some of the various problems dealt with were: Auto maintenance and operation, accounting of material, and neatness and appearance of properties. Fred L. Richardson, L. L. Dyer and R. Vandercook led the discussions on these subjects.

At the foremen's luncheon, Karl L. Griffith, general counsel for the Lone Star, was the chief speaker. His talk traced the growth of the Lone Star Gas Company from its inception.

OKLAHOMA TOWNS TO HAVE GAS FOR WINTER CONSUMPTION

Apache and Kingfisher were added last week to the list of Oklahoma towns which will start the winter months with natural gas service. The Apache Gas Company has completed its distribution system at Apache, securing its supply from the Consolidated Gas Utilities Company's pipeline. The distribution system at Kingfisher is owned by the Kingfisher Gas Company, allied with the Murschison Oil Company of Dallas. Seventy-five service connections have been made and it is expected that 300 people will be using gas in Kingfisher by the first of the year. The supply comes from the Crescent gas field.

The Taylor-Easterling Company of Tulsa, Oklahoma, is making a survey for a proposed natural gas pipeline connecting with the Chickasha gas fields, and to distribute gas in Carnegie, Fort Cobb, Mountain View, Duke, Binger, Gotebo, Geary, Olustee, Roosevelt, Verden, Mountain Park, Snyder and other southwestern Oklahoma towns. Franchises have been secured by the company in the foregoing towns.

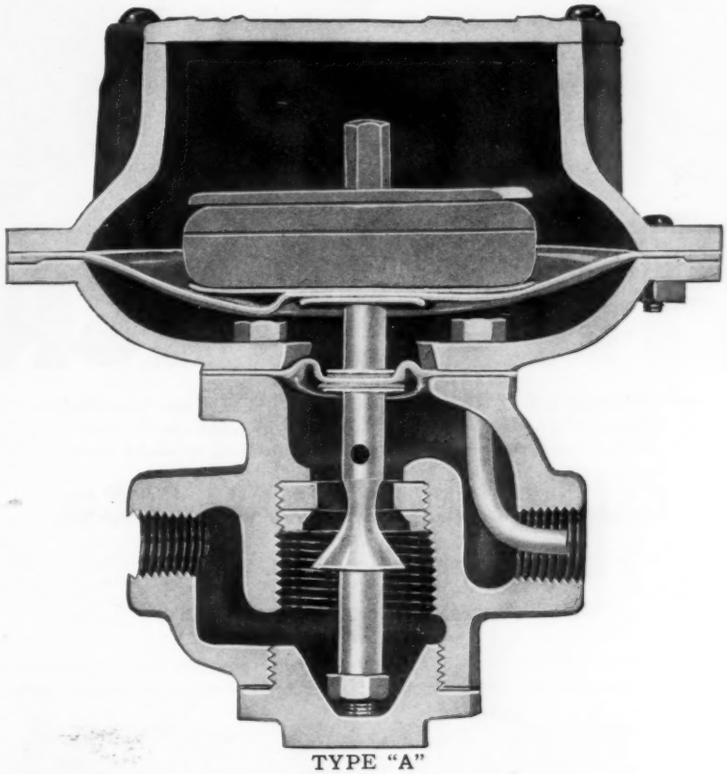
WARD HEATER COMPANY OPENS TWO NEW CALIF. BRANCHES

Two direct factory sales agencies were established last month by the Ward Heater Company, Los Angeles, gas floor furnace manufacturers, according to announcement by N. A. Wright, general manager. The first was at San Diego, an office and warehouse being opened at 547 F street, under the management of W. H. Hermes, a Ward company representative for many years. The Ward Hater Company of Orange County was then organized and leased headquarters at 2001 Maple street, Santa Ana. Ownership of this company is vested in G. F. Chambers and W. R. White.

CONTRACT LET FOR NEW GAS HOLDER AT VANCOUVER, B. C.

Contract has been let by the B. C. Electric Company for the construction of a gas container at Vancouver, B. C. Concrete piles are being used in the foundation, which is progressing rapidly. The holder will have a capacity of 3,000,000 cubic feet, and will cost approximately $72,000.

Reliance Low Pressure or Appliance Regulator



TYPE "A"

This type of regulator is designed for use directly on a gas supply to the appliance or for governing entire house supply up to the limits of inlet pressure and capacity.

Remarkable for its ability to maintain pressures under great demand. Capacity 50% to 100% greater than any other regulator on the market.

Built in sizes 3/8", 1/2", 3/4", and 1".

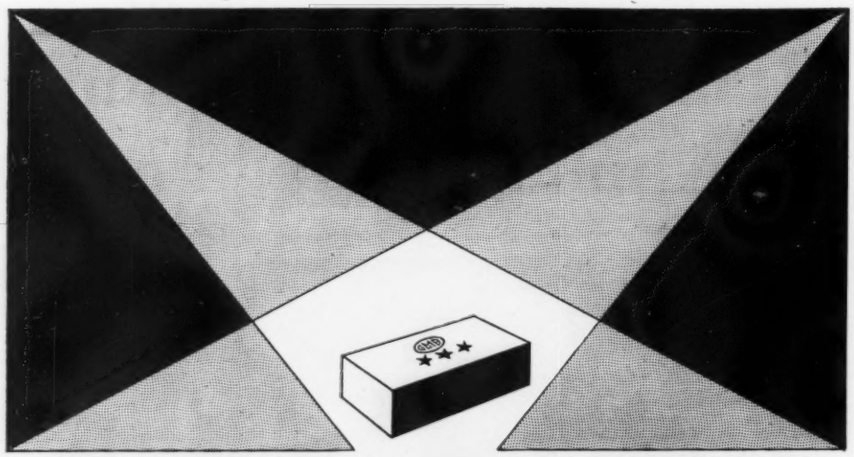
Reliance Manufacturing Company

ALHAMBRA, CALIFORNIA

Mettler Entrained Combustion Gas Burners

FOR ALL Purposes Kinds of gas Pressures

406 S. Main St. LEE B. METTLER, CO. Los Angeles, Cal.



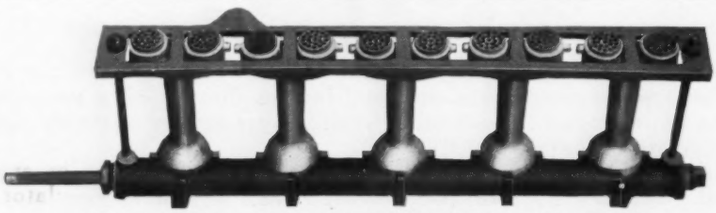
FIRE BRICK

LININGS, CHECKERS and BOILER SETTINGS are carried in stock for quick shipment. If special or hand-made shapes are required, our plant is especially equipped to make them.

GLADDING, Mc BEAN & CO.

SAN FRANCISCO LOS ANGELES
PORTLAND SEATTLE

420



AT LAST—A Real BUNSEN BURNER

The vertical verturi tube burner has always been recognized as the scientific way to burn gas. Produces the hottest flame of any gravity burner.
The most satisfactory Laboratory burner known to Science has now been made available to the public in the Perfection Multiple Unit Furnace.
Will burn equally efficiently on either high or low pressure. Requires no adjustment.

L. H. FREYMUTH, JR., 311 E. Pico St., Los Angeles, Calif.

The War Department, after a two year test, has purchased 140 No. 1 and No. 2 Electrogas Floor Furnaces for the San Francisco Presidio.

quality ELECTROGAS FURNACE CO. SAN FRANCISCO economy

Skelgas

(*Continued from Page 27*)

through dealers, who in most cases are hardware merchants, plumbers and those engaged in similar lines of business. Up to this time it has not been deemed advisable to market *Skelgas* through gasoline and oil jobbers or dealers or through the Skelly Oil Company's own service stations.

One of the most effective advertising methods employed has been the sending of complete equipment with experienced demonstrators to the various county and state fairs and pure food exhibitions in the territory covered.

Friday the *Thirteenth*

(*Continued from Page 23*)

increase in outside sales.

The average sales made per week in New Orleans by the New Orleans Public Service Inc. amounts to 63 ranges. The average sales per day is 11 ranges. During the Friday the 13th Sale, beginning on January the 9th, and ending January, Friday the thirteenth—a five day period—159 ranges were sold. Of this number 63 were sold on Friday the 13th—the last day of the sale. The results obtained were very gratifying, as is apparent from the number of ranges sold.

In 1929 there are two "Friday the thirteenths" on which this sale can be featured, one falling in September and the other in December. Make preparations to cash in on these days! It *was* an idea in New Orleans, but now it *is* an institution.

FIFTY YEAR GAS FRANCHISE AT FAYETTEVILLE, ARK.

Fayetteville, Arkansas, has granted a 50-year gas franchise to John McCullough of Tulsa, Oklahoma, who will pipe gas from Oklahoma and from the Clarksville, Arkansas, district to that city.

Reports from Northwest Arkansas indicate that another large gas field may be uncovered in the Fayetteville territory, approximately 50 miles northwest of the Clarksville field.

BROWNWOOD, TEXAS, COUNCIL PASSES NEW RATE RULES

City Council of Brownwood, Texas, has passed an ordinance embodying new gas rates for the city, which represents a compromise between Brownwood and the Community Natural Gas Company The new rate is $1.25 for first 1,000 cubic feet, 60 cents per 1,000 for the next 4,000 cubic feet and 55 cents a thousand for all over 4,000 cubic feet.

J. BURR GIBBONS ACCEPTS POST WITH OIL WELL IMPROV. CO.

J. Burr Gibbons, general manager of the International Petroleum Exposition, has been named vice-president and general manager of the Oil Well Improvement Company of Tulsa, manufacturers of equipment for oil field use. Mr. Gibbons will assume his new duties on November 1st.

HONOR INVENTOR OF WELSBACH GAS BURNER

Herr Karl Freiherr Auer von Welsbach, inventor of the Welsbach gas burner recently celebrated his 70th birthday in his castle in Carinthia, Austria. Herr von Welsbach also invented ferro-cerium compound, the metal used in making modern pocket lighters. All Austria honored his natal day.

C. & G. COOPER CO. PURCHASES HOPE ENGINEERING PLANT

Announcement is made by the C. & G. Cooper Company that a transaction has been completed by which the Cooper Company takes over the manufacturing department of the Hope Engineering Company, including the manufacturing plant, plant site and engine designs. Beginning with October 1st, the Hope plant will be operated as a division of the Cooper plant.

The Hope factory is located in Mt. Vernon, only a few blocks from the Cooper plant, and will permit of further expansion. In the past the Cooper plant has found it necessary to go outside of Mt. Vernon for manufacturing capacity, and the purchase of the Hope plant will permit more of this work to be done in Cooper plants under closer observation, according to Cooper Company officials.

The sale of the manufacturing department will enable the Hope Engineering Company to devote more of its efforts to pipe line and construction activities, upon which the company has been centering its efforts in recent years.

MERIDIAN, TEXAS WILL BE SUPPLIED NATURAL GAS

The E. T. Williams Oil Company of Amarillo, a subsidiary of the Gibson Oil Company, has been granted a gas franchise by the city council of Meridian, Texas. The company plans to pipe the gas from the Laney field near Hico, Texas, according to announcement. The line will also run to Iredell, Walnut Springs, Clifton and Valley Mills.

SOUTHERN PIPE LINE COMPANY SECURES WINNEFIELD PERMIT

A gas franchise has been awarded the Southern Pipe Line Company, subsidiary of the Southern Carbon Company of Monroe, by the city council of Winnefield, Louisana. A six-inch line will be constructed from the gas fields at Tullos, Louisana, a distance of 21 miles, to supply Winnefield. The line will cost approximately $25,000.

MERCO NORDSTROM OPENS DALLAS OFFICE

The Merco Nordstrom Valve Company has established an office in Dallas, Texas, with R. I. Mayoraga in charge. Mr. Mayoraga was formerly in charge of the Houston, Texas, office. N. B. Lynch takes Mr. Mayoraga's place there. The Dallas office is located in the Magnolia Building.

INCREASE SHOWN IN CITIES SERVICE CO. EARNINGS

Cities Service Company's net earnings for the 12 months ended August 31, 1928, were the largest for any 12 months in the company's history, amounting to $32,315,254, an increase of $2,535,947 over the net earnings for the year ended August 31, 1927.

KANSAS PIPELINE & GAS CO. TO BUILD IN MANHATTAN, KAN.

The Kansas Pipeline and Gas Company will erect a four-story brick office building in Manhattan, Kansas, according to announcement from officials. This company early in October filed formal acceptance of a gas franchise awarded the company by the city.

ST. PAUL, KANSAS, TO HAVE NATURAL GAS

St. Paul, Kansas, through its city council granted a gas franchise early in October to O. L. Holland, J. D. Ladd and E. Schofield of Joplin, Mo. Gas will be supplied from wells southeast of St. Paul.

Dehydration

in its simplest form

Diagrammatic top view

THE PIONEER SEPARATOR

without a moving part, accomplishes the complete separation of liquids from gas or other vapors.

PIONEER EQUIPMENT CORPORATION
OF AMERICA
231 BROADWAY NEW YORK
Calif. Representative
H. PLUMMER
806 Fife Building
San Francisco, California

Fire Brick Contractors

Established 1906

J. T. Thorpe & Son

Inc.

Specializing in Gas Generator, Boiler, Still and Furnace Brick, Industrial Furnaces, Retorts, Kilns, Brick Smokestacks.

A capable Engineering Department competent to advise on any problem involving firebrick construction.

San Francisco 417 Market St. | Seattle 305 White Bldg. | Portland 609 Ry. Exch. Bldg. | Los Angeles 321 W. 3rd St.

HOT-N-KOLD

The Hot-N-Kold Shops are now serving the public in eight cities in the northern part of California with Kelvinator Refrigeration, Holbrook Ranges, Welsbach Water Heaters, and other major appliances.

A valuable business franchise awaits the right dealer in every town.

HOT-N-KOLD CORPORATION
949 Mission Street San Francisco, California

GILFILLAN
Dual Control Valve Regulators

Write for literature

SAVE ONE INSTALLATION

Maintain a constant steam pressure on the boiler
and
Reduce and maintain an unvarying gas pressure to the burner regardless of the variation in line pressure.

Built to control Boiler pressure from one pound to 200 pounds steam, and deliver as low as two ounces gas pressure at the burner.

GILFILLAN MACHINE WORKS, Inc.
Ebenezer, Erie Co., N. Y.

Representatives
Jensen Instrument Co., 624 E. Fourth St., Los Angeles, Calif.
Gas Appliance Service Corp, 2014 Bryan St., Dallas, Texas.
The Diamond Supply Co., Charleston, W. Va.

The Magic Way Company

Gas Heating Devices

including

"Magic Way" Gas Furnaces
"Magic Way" Control Valves and Switches
"Potter" Radiators
"Steel Made" Radiators
"Cole" Floor and Wall Heaters
"Hall" Floor Furnaces

Manufactured by

Magic Way Company
National City San Diego California

Stargas

(*Continued from Page 26*)

of the cylinder (1) through the cylinder valve (2) pigtail connection (3) and the cross (5) into the regulator (7). The low pressure gas from the regulator goes to the customer's appliances through the service line (9). The gauge (6) indicates the pressure that is in the cylinder being used and the mercury seal (8) relieves the pressure on the service line if the regulator does not function properly. As the liquid in the cylinder evaporates and passes out, the pressure on gauge (6) will indicate approximately the quantity left in the cylinder. When all has passed out the gauge will read zero pressure and the flame will go out on the burners. The housewife then closes cylinder valves (2) and line valve (4) on the empty cylinder and opens the corresponding valves on the full cylinder which puts it into service.

There is a post card attached to each cylinder in a weather proof envelope. This card is stamped and addressed to the nearest service station. It has on it the name and address of the customer and the date the cylinder was installed. When a cylinder is empty the card is simply detached, dated and dropped in the mail. When it is received at the service station, it can be seen from the length of time it took the customer to use the last cylinder when the next will have to be installed. This assists the service man to make his rounds with least loss of time.

Extensive research work has been carried out by the chemists and engineers of the Lone Star Gas Company in the application of *Stargas* to ordinary gas burning equipment. It has been found that with only a slight change in the size of the orifice in the spuds *Stargas* burns on all appliances with an efficiency equal to or slightly greater than natural gas and with another slight change in the height of the burners even greater efficiencies may be obtained. This applies to everything except a gas light. Though special laboratory experiments have developed a mixture that will give a fairly good light at 4 ounce gas pressure, no burners that are at present on the market have been made to give as good a light as can be obtained with natural or artificial gas.

Stargas is being sold in Texas cities and towns at rates that make it considerably cheaper than the best rates being published for electric service on ranges, water heaters and house heating and only slightly more than rates on artificial gas.

CONVERSION EASY

Appliances that are used with this gas can be readily converted to burn natural or artificial gas and the house piping is the same.

Stargas has been in commercial use by actual domestic consumers for about eight months. These have used it on gas ranges, water heaters, hot plates, steam tables and coffee urns. In every instance it has given no trouble and the users are more than satisfied.

STAUFFER CHEMICAL CO. WILL BUILD NEW WESTERN PLANT

The Stauffer Chemical Company will start construction work immediately on a $750,000 plant for the manufacture of sulphuric acid and caustic soda. Operation of the new plant will be conducted by the Dominguez Chemical Company, which will be incorporated under the laws of California as a subsidiary organization of the Stauffer Chemical Company, plant to be located at Dominguez, Cal.

FUTURE BRIGHT FOR CITY OF NEW ORLEANS, SAYS FORECAST

Anticipated growth of the city of New Orleans will require an expenditure of $55,000,000 for the extension of power, gas and transportation facilities, according to statistics compiled by the Association of Commerce of that city. Construction totaling $366,600,000 is shown by the new edition of "New Orleans Projects," compiled under the direction of the National Advertising Committee.

ST. JOSEPH GAS CO. TRANSFERS STOCK TO GAS SERVICE CO.

The transfer of all common stock of the American Light and Traction Company in the St. Joseph, Missouri, Gas Company, to the Gas Service Company, which recently purchased it, has been completed. Stockholders of the company held a meeting on October 24th for the purpose of electing directors.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.,

Required by the Act of Congress of August 24, 1912, of *Western Gas*, published monthly at Los Angeles, California, for October 1, 1928.

State of California,
County of Los Angeles—ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Jay Jenkins, who, having been duly sworn according to law, deposes and says that he is the publisher of the *Western Gas*, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher—Jay Jenkins, Los Angeles, Calif.
Editor—George H. Finley, Los Angeles, Calif.
Managing Editor—George H. Finley, Los Angeles, Calif.
Business Managers—Jay Jenkins, Los Angeles, Calif.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)
Western Business Papers, Inc., 124 W. Fourth St., Los Angeles, Calif.
Jay Jenkins, 124 W. Fourth St., Los Angeles, Calif.
James E. Jenkins, 124 W. Fourth St., Los Angeles, Calif.
George H. Finley, 124 W. Fourth St., Los Angeles, Calif.
H. Elliott Taylor, San Francisco, Calif.
Craig Espy, Dallas, Texas.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)
None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is..... (This information is required from daily publications only).

JAY JENKINS, Publisher.

Sworn to and subscribed before me this 27th day of September, 1928.

(SEAL) MIRANDA H. OLDS.
Notary Public.
(My commission expires Oct. 14, 1931.)

The Pioneer Small Trencher

The Pioneer Small Trencher

64 MAJOR GAS COMPANIES ARE SUCCESSFULLY AND ECONOMICALLY OPERATING 130

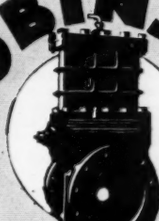
CLEVELAND BABY DIGGERS

A proved and tried machine The Baby Digger through performance has demonstrated to these public service companies that on their small class of work it is the most practical method of trench digging.
The Baby Digger, small, compact and easily handled, operates in limited working spaces. Rugged and powerful, it produces a maximum footage in the toughest, hardest soils. Extremely mobile, it is easily moved from location to location at truck speed.

The Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland, Ohio
"Pioneers of the Small Trencher"
EDWARD R. BACON CO., 17th at Folsom Streets, San Francisco

THE BABY DIGGER

ROBINSON



ORIFICE FITTINGS

They eliminate old style by-pass
They save materials
They save time
They save labor
Changing plates is simplified
Orifice is always centered
Frequent inspection is possible
Occupy little space
Make for better metering
No hazards
Cannot leak, etc.

ROBINSON ORIFICE FITTING COMPANY
1435 SANTA FE AVENUE
LOS ANGELES, CALIF., U.S.A.

If you can't afford to extend your lines use ROCKGAS

Hold your potential customers by giving them temporary service with ROCKGAS in territories where you are not yet ready to extend your lines. Or permanent service where extension of lines is impractical.

ROCKGAS
a pure natural gas

—liquified under pressure in convenient sized tanks. Smallest, 12x37 inches; holds equivalent of 2666 cu. ft. 500 B. t. u. gas. Largest, holds equivalent of 36,550 cu. ft. 500 B. t. u. gas. Other sizes to meet any requirements.

ROCKGAS now used and endorsed by homes, camps, stores, etc., throughout the United States.

A few rich California territories open for distributors. Write today for full details.

IMPERIAL GAS CO.
3190 Walnut St.
(Sta. B, Box 3028)
Long Beach, Calif.

A WESTERN GUIDE to INDUSTRIAL PURCHASING

Readers interested in any articles not listed in these pages are cordially invited to advise *Western Gas* of their wants and every effort will be made to furnish a list of the proper manufacturers. Addresses of companies listed on these pages may be found by consulting their advertisements in this issue.

Absorption and Compression Plant Equipment
Baker Iron Works.
Chaplin-Fulton Mfg. Co.
Jensen Instrument Co.
The E. A. Key Company
Western Pipe & Steel Co.

Absorption Towers
Baker Iron Works.
Western Pipe & Steel Co.

Adjustable Plugs
Lattimer-Stevens Co.
Western Pipe & Steel Co.

Agitators
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Aluminum Bronze Powder for Paint
W. P. Fuller & Co.
Hill, Hubbell & Co.

Analyzers
Fort Worth Laboratories.
Smith-Emery Co.

Apparatus, Experimental Gas
The Bartlett Hayward Co.
Pacific Meter Works.

Appraisals and Valuations
Charles R. Collins.
Smith-Emery Co.
United Engineers & Constructors, Inc.

Automobile Tires
Motor Tires, Inc.

Bags, Gas Main
C. B. Babcock Co.
Mueller Co.
Safety Gas Main Stopper Co.

Barometers
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
Westcott & Greis, Inc.

Bench Iron Work
The Bartlett Hayward Co.
General Gas Light Co.

Blocks and Tiles, Fire Clay
Gladding, McBean & Co.
Stockton Fire Brick Co.

Blowers and Boosters
Ingersoll-Rand Co.
Connersville Blower Co.
The P. H. & F. M. Roots Co.
United Engineers & Constructors, Inc.

Boiler Controls
The Cleveland Heater Co.
Gilfillan Machine Works, Inc.

Boiler—Brickwork
J. T. Thorpe & Son, Inc.

Boiler Equipment
E. A. Key Co.

Boiler Maker's Tools
E. A. Key Co.

Boilers, Gas-Fired
C. B. Babcock Co.
Baker Iron Works.
Leahy Mfg. Co.

Boiler Settings, Pipe and Boiler Insulation
Pioneer Paper Company.
J. T. Thorpe & Son, Inc.

Boilers, Waste Heat
Baker Iron Works.
The Bartlett Hayward Co.
Phillips Heating, Ventilating & Mfg. Co.
United Engineers & Constructors, Inc.

Boilers, Water Tube
Baker Iron Works.
Western Pipe & Steel Co.

Breakers
Ingersoll-Rand Co.

Breeching (Boiler and Stack)
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Brick, Firebrick
Gladding, McBean & Co.
Stockton Fire Brick Co.
United Engineers & Constructors, Inc.

Brick, Firebrick—Installation
J. T. Thorpe & Son, Inc.

Brushes, Wire Pneumatic
Ingersoll-Rand Co.

Buildings, Steel
Baker Iron Works.
United Engineers & Constructors, Inc.
Western Pipe & Steel Co.

Bunkers, Steel and Concrete
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Burners, High Pressure
Leahy Mfg. Co.
Lee B. Mettler.
Rotary Manufacturing Co.

Burners, Low Pressure
C. B. Babcock Co.
The Bartlett Hayward Co.
Western Pipe & Steel Co.
General Gas Light Co.
Johnson Gas Appliance Co.
Leahy Mfg. Co.
Lee B. Mettler.
Pacific Gas Radiator Co.
Payne Furnace & Supply Co.
Phillips Heating, Ventilating & Mfg. Co.
Rotary Manufacturing Co.

Burners—Oil
Leahy Mfg. Co.
Rotary Manufacturing Co.

By-Product Recovery Apparatus
The Bartlett Hayward Co.

Calorimeter Accessories
Fort Worth Laboratories.
Pacific Meter Works.
United Engineers & Constructors, Inc.

Cases, Meter
Pacific Meter Works.
Pittsburgh Equitable Meter Co

Casinghead, Gas Meters
The Bristol Company
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.

Casing and Tubing (steel)
South Chester Tube Co.

Casing—Iron
South Chester Tube Company

Cast Iron Pipe
McWane Cast Iron Pipe Co.
United States Cast Iron Pipe and Foundry Co.

Castings
The Bartlett Hayward Co.
United States Cast Iron Pipe and Foundry Co.

Cement
Stockton Fire Brick Co.

Cement, High Temperature
Stockton Fire Brick Co.

Centrifugal Pipe
United States Cast Iron Pipe and Foundry Co.

Charging Machines (retort, etc.)
The Bartlett Hayward Co.

Checker Brick
Gladding, McBean & Co.
Stockton Fire Brick Co.

Chemical and Gas Testing Apparatus
Fort Worth Laboratories.
Pacific Meter Works.
Stauffer Chemical Co.
United Engineers & Constructors, Inc.
Westcott & Greis, Inc.

Chemists, Analytical
Fort Worth Laboratories.
Smith-Emery Co.

Chimneys, Radial Brick
Gladding, McBean & Co.
Stockton Fire Brick Co.

Chimneys, Radial Brick Installation
J. T. Thorpe & Son. Inc.

Chutes (coal, coke, ash)
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United States Cast Iron Pipe and Foundry Co.

Clamps and Sleeves, Pipe
S. R. Dresser Mfg. Co.
Mueller Co.

Clamps, Service
Mueller Co.

Cleaners, Service
C. B. Babcock Co.
Pacific Meter Works.

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Charles R. Collins.
The Bartlett Hayward Co.

Coal Tar Products and Chemicals
W. P. Fuller & Co.

Cocks
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Johnson Gas Appliance Co.
Lattimer-Stevens Co.
Leahy Mfg. Co.
Merco Nordstrom Valve Co.
Mueller Co.
Geo. D. Roper Corporation.

Collectors, Dust
Western Pipe & Steel Co.

Compressors, Air
Ingersoll-Rand Co.
Leahy Mfg. Co.

Compressors, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, High Pressure
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Compressors, Portable
Ingersoll-Rand Co.

Condensers
Baker Iron Works.
The Bartlett Hayward Co.
Ingersoll-Rand Co.

Condenser Boxes
Baker Iron Works.

Controllers
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
The Foxboro Co., Inc.
Robertshaw Thermostat Co.

Controls, Air and Steam
The Bartlett Hayward Co.
The Bristol Company
The Foxboro Co., Inc.
Jensen Instrument Co.

Cooling Systems
The Bartlett Hayward Co.

Cooling Towers
J. B. Gill Corporation.

Counters, Revolution
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.

Couplings
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The Bartlett Hayward Co.

Couplings—Flexible Rope & Spider Arm
The P. H. & F. M. Roots Co.

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Pioneer Paper Company.

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Pacific Meter Works.

Cutters, Pavement
Ingersoll-Rand Co.

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The C. & G. Cooper Co.

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Western Pipe & Steel Co.

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Chaplin-Fuiton Mfg. Co.
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Pittsburgh Equitable Meter Co

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Ingersoll-Rand Co.

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The Bartlett Hayward Co.

Door, Clean-out
Baker Iron Works.

Drills
Ingersoll-Rand Co.
Mueller Co.

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South Chester Tube Company

Drill Pipe—Steel
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Elevators
Baker Iron Works.

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J. B. Gill Corporation.
The Bartlett Hayward Co.
Smith-Emery Co.
United Engineers & Constructors, Inc.
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Engines, Diesel
The C. & G. Cooper Co.

Engines, Gas
The C. & G. Cooper Co.
Ingersoll-Rand Co.
United Engineers & Constructors, Inc.

Engines, Oil
The C. & G. Cooper Co.
Ingersoll-Rand Co.

Engines, Steam
Ingersoll-Rand Co.

Evaporating Apparatus
The Bartlett Hayward Co.
United States Cast Iron Pipe and Foundry Co.

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The Cleveland Trencher Co.

Exchangers, Heat
Baker Iron Works.
Western Pipe & Steel Co.

Exhausters
Connersville Blower Co.
Ingersoll-Rand Co.
United Engineers & Constructors, Inc.
United States Cast Iron Pipe and Foundry Co.
The P. H. & F. M. Roots Co.

Experimental Apparatus
The Bartlett Hayward Co.
Pacific Meter Works.

Filters
United States Cast Iron Pipe and Foundry Co.

Fire Clay and Products
Gladding, McBean & Co.
Stockton Fire Brick Co.

Fire Brick Contractors
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Stockton Fire Brick Co.

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McWane Cast Iron Pipe Co.
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Fixtures, Lighting (Domes, Portables, etc.)
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Welsbach Company.

Fire Brick
Gladding, McBean & Co.
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Flanges
Pittsburgh Equitable Meter Co
Westcott & Greis, Inc.

Forgings
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Payne Furnace & Supply Co.
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Electrogas Furnace Co.
Magic Way Company
Pacific Gas Radiator Co.
Payne Furnace & Supply Co.

Furnaces, Heating
The Estate Stove Co.
Payne Furnace & Supply Co.
Magic Way Company.
Pacific Gas Radiator Co.
Phillips Heating, Ventilating & Mfg. Co.

Furnaces, Industrial
C. B. Babcock Co.
Johnson Gas Appliance Co.
Leahy Mfg. Co.
Mueller Co.
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Gas Analysis Apparatus
The Foxboro Co., Inc.
Fort Worth Laboratories.
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Gas Masks
Safety Gas Main Stopper Co.

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Mueller Co.

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Pittsburgh Equitable Meter Co
Safety Gas Main Stopper Co.
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Gasket Compound
W. P. Fuller & Co.
E. A. Key Co.

Gas Pipe Line Construction
Western Pipe & Steel Co.

Gates—Wind & Blast
The P. H. & F. M. Roots Co.

Gauges
The Bristol Company
Fort Worth Laboratories.
The Foxboro Co., Inc.
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Westcott & Gries, Inc.

Gauges, Steam
The Bristol Company
Jensen Instrument Co.
The Foxboro Co., Inc.
Westcott & Gries, Inc.

Gauges, U Type
C. B. Babcock Co.
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
Lee B. Mettler.
Pacific Meter Works.
Safety Gas Main Stopper Co.
The Foxboro Co., Inc.
Westcott & Gries, Inc.

Generators, Water Gas
The Bartlett Hayward Co.
Baker Iron Works.

Glassware
Fort Worth Laboratories.
Westcott & Gries, Inc.

Governors
C. B. Babcock Co.
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Sprague Meter Co.
Westcott & Greis, Inc.

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Hanger, Meter
Mueller Co.

Hangers, Iron and Steel
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C. B. Babcock Co.
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General Gas Light Co.
Magic Way Company.
Payne Furnace & Supply Co.
Phillips Heating, Ventilating & Mfg. Co.
Welsbach Company.

Heaters, Floor
General Gas Light Co.
Magic Way Company.
Pacific Gas Radiator Co.
Payne Furnace & Supply Co.

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Sensitive Service Governor

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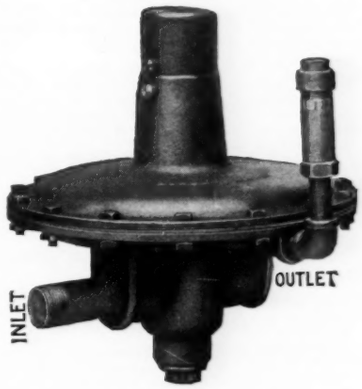

Gives any desired delivery pressure regardless of Pressure fluctuations at inlet

THE FULTON Sensitive Service Governor is opened by a spring instead of lever and weight. This spring is constructed of special material and of a new design—it will not break or lose its elasticity. A simple turn to the right or left of the adjustment screw will give any desired pressure from 2 inches water to 6 ounces. The spring case can then be locked and sealed against tampering persons.

The FULTON Sensitive Service Governor (Spring Style) is particularly adapted for use on high pressure service lines connecting users directly with high pressure mains. It is extremely sensitive. Will control any intake pressure up to 100 lbs. and give any desired delivery, with practically no variation, no matter how greatly the inlet pressure may fluctuate.

The FULTON Sensitive Service Governor (Spring Style) is recommended for either Natural or Manufactured Gas.

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A. O. Smith Corporation
South Chester Tube Company

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Linings—Car
Pioneer Paper Company.

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Mueller Co.
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Mueller Co.
Safety Gas Main Stopper Co.

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Welsbach Company.

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Lee B. Mettler.
Westcott & Greis, Inc.

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Jensen Instrument Co.
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United Engineers & Constructors, Inc.
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Pittsburgh Equitable Meter Co
The Foxboro Co., inc.

Meters, Burner Test
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Cast Iron Gas
The Bartlett Hayward Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meter Connections
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Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Complaint
Pittsburgh Equitable Meter Co

Meters, Consumers
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Flow
The Foxboro Co., Inc.
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Westcott & Greis, inc.

Meters, Fluid
The Bristol Company
Jensen Instrument Co
Pittsburgh Equitable Meter Company
The Foxboro Co., Inc.
Westcott & Gries, Inc.

Meters, Gas
Connersville Blower Co
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
The P. H. & F. M. Roots Co.

Meters, Gasoline and Oil
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Westcott & Gries, Inc.

Meters, High Pressure Distribution
The Bristol Company
Fort Worth Laboratories.
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
Pacific Meter Works.
Sprague Meter Co.
The Foxboro Co., Inc.

Meters, High Pressure Iron Case
The E. A. Key Company
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Industrial Consumers
The Bristol Company
Connersville Blower Co.
Jensen Instrument Co.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
The Foxboro Co., Inc.
The P. H. & F. M. Roots Co.

Meters, Iron Case
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Laboratory
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Large Capacity
Connersville Blower Co.
Jensen Instrument Co.
Pacific Meter Works.
Sprague Meter Co.
The P. H. & F. M. Roots Co.
Westcott & Greis, Inc.

Meters, Oil
Connersville Blower Co.
Jensen Instrument Co.
Pittsburgh Equitable Meter Co
The Foxboro Co., Inc.
The P. H. & F. M. Roots Co.
Westcott & Greis, Inc.

Meters, Orifice
Jensen Instrument Co.
Pacific Meter Works.
Robinson Orifice Fitting Co.
The Foxboro Co., Inc.
Robinson Orifice Fitting Co.
Westcott & Greis, Inc.

Meters, Oxygen
Fort Worth Laboratories.
Pacific Meter Works.
Pittsburgh Equitable Meter Co
Sprague Meter Co.

Meters, Oxygen and Hydrogen
Pacific Meter Works.
Pittsburgh Equitable Meter Co
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Pittsburgh Equitable Meter Co
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Jensen Instrument Co.
The Foxboro Co., Inc.
United Engineers & Constructors, Inc.
Westcott & Greis, Inc.

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Pacific Meter Works.
Lattimer-Stevens Co.
Sprague Meter Co.
Westcott & Greis, Inc.

Meters, Water
Jensen Instrument Co.
Lattimer-Stevens Co.
Westcott & Greis, Inc.

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Pittsburgh Equitable Meter Co

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United Engineers & Constructors, Inc.

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South Chester Tube Company

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Mueller Co.

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Pittsburgh Equitable Meter Co

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Mueller Co.
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Western Pipe & Steel Co.

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Geo. D. Roper Corporation.
Tappan Stove Co.

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Geo. D. Roper Corp.
Tappan Stove Co.

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Ingersoll-Rand Co.

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Magic Way Company.
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Phillips Heating, Ventilating & Mfg. Co.
The Foxboro Co., Inc.

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Leahy Mfg. Co.
The Bristol Company
Chaplin-Fulton Mfg. Co.
Fort Worth Laboratories.
Gilfillan Machine Works, Inc.
Reliance Mfg. Co.
Mueller Co.
Reynolds Gas Regulator Co.
Sprague Meter Co.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Regulators, Hot Water Heat Control
The Bristol Company
Mueller Co.

Regulators, Low Pressure
C. B. Babcock Co.
The Bristol Company
Chaplin-Fulton Mfg. Co.
Fort Worth Laboratories.
Gilfillan Machine Works, Inc.
Phillips Heating, Ventilating & Mfg. Co.
Reliance Mfg. Co.
Mueller Co.
Reynolds Gas Regulator Co.
Sprague Meter Co.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

Regulators, Temperature
C. B. Babcock Co.
The Bristol Company
Fort Worth Laboratories
Jensen Instrument Co.
Leahy Mfg. Co.
Magic Way Company.
Payne Furnace & Supply Co.
Phillips Heating, Ventilating & Mfg. Co.
The Foxboro Co., Inc.
Westcott & Greis, Inc.

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C. B. Babcock Co.

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The Bartlett Hayward Co.
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Rock Gas
Imperial Gas Co.

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The C. & G. Cooper Co.
Pioneer Paper Company.

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General Gas Light Co.

Rust Preventatives
Pioneer Paper Company.

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Lattimer-Stevens Co.

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The Bartlett Hayward Co.
United Engineers & Constructors, Inc.
Western Pipe & Steel Co.

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J. T. Thorpe & Son, Inc.

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Western Pipe & Steel Co.

Shingles
Pioneer Paper Company.

Sleeves
S. R. Dresser Mfg. Co.

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The Bartlett Hayward Co.
Western Pipe & Steel Co.

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Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Steel Plate Construction
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Steel Work, Structural
Baker Iron Works.
Western Pipe & Steel Co.

Stills
Baker Iron Works.
The Bartlett Hayward Co.
Western Pipe & Steel Co.

Stoppers, Gas Main
C. B. Babcock Co.
Mueller Co.
Safety Gas Main Stopper Co.

Stops, Brass
Lattimer-Stevens Co.
Mueller Co.

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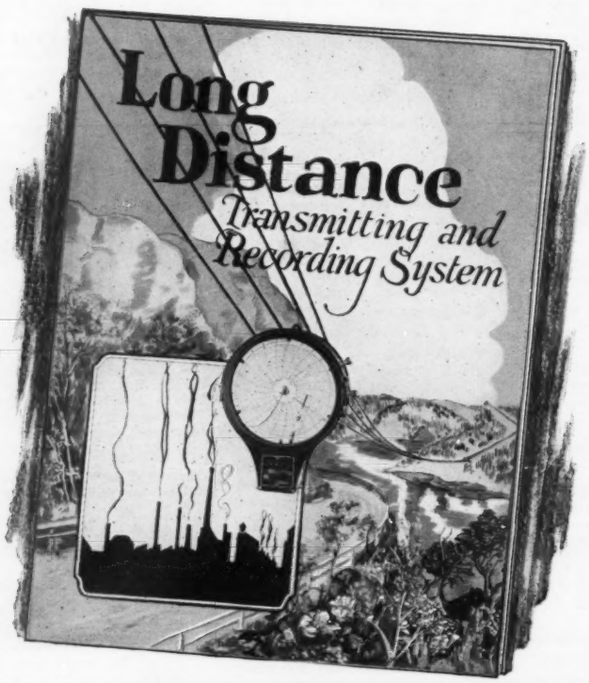

New Bristol's Catalog

Gives interesting story of how Long Distance centralizes operating information at the point of control.

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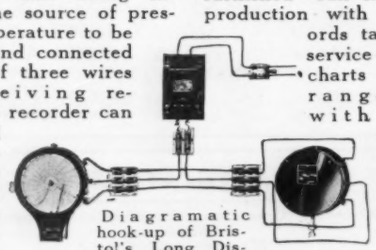

Diagramatic hook-up of Bristol's Long Distance System for Pressure. Left: Indicating Transmitter; right: Recording Receiver.

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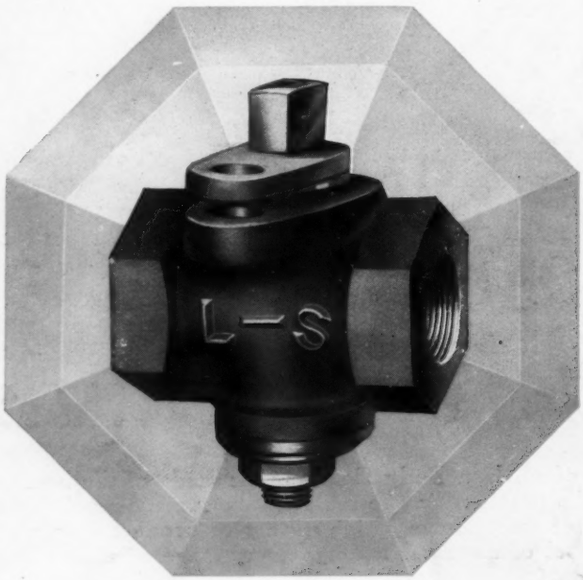

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